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## URINARY RETENTION—ITS SIGNIFICANCE AND TREATMENT

BY JOHN H. CUNNINGHAM, M. D., BOSTON

IN considering the subject of urinary retention before this meeting, the desire is to convey the conception of its meaning in its broadest sense. It is a subject which concerns not only the genito-urinary surgeon but has its place in all forms of surgery and medicine, because of the fact that the kidneys are of primary importance in the process of elimination, and any impairment of their function has a direct bearing upon the outcome of any major operation or serious illness.

Because I have been convinced that the general surgeon and the surgeons of the various specialties which deal with diseases entailing a threatening mortality may not have a concise understanding of the dangers of urinary retention, I wish at this time to attempt to convey what I believe the conception of this condition should be; the means of detecting it; and the measures which should be employed to combat it.

The investigations in the field of urology have already given much to the general profession. Pathological elements in the urine have been traced to lesions in the bladder, ureter, or kidneys by cystoscopy, ureter catheterization and pyelography; other lesions by X-Ray alone. By the same means pain in the back, and especially in the right upper quadrant of the abdomen has, even with an essentially normal urine, often been correctly attributed to a renal lesion, most often, however, only after treatment along orthopedic lines, or after misdirected abdominal operations, especially upon the gallbladder and appendix.

Renal function tests, either giving the combined renal value, or the comparative value of the kidneys by employing ureter catheterization, have become primary diagnostic procedures. Blood chemistry combined with these function tests has made possible a great advance in accurately establishing the degree of renal damage.

These diagnostic features are no small contribution to the advance of modern surgery, and are perhaps the basis for the contribution which the urologist has given to general medicine in establishing the importance of saturating the body with water in all diseases which have infection or toxemia as their origin, in order to promote elimination through kidney activity.

While the genito-urinary surgeon is concerned particularly with the means of combatting a toxemia, usually referred to as uremia, dependent upon urinary retention, the principle of kidney elimination in all forms of toxemia and sepsis by forcing fluids to the physiological limit, and thus promoting kidney secretion and elimination, has become more generally appreciated.

It is my feeling, however, that while these general principles are acknowledged, the complete significance of urinary stasis, in its broadest sense, is not yet fully appreciated in general surgery and medicine.

Urinary retention, with which we are concerned at this time, implies stasis within the urinary system, produced not only by obstruction at some level within the urinary tract, but by defects in the kidney eliminating functions, from whatever cause. It is most commonly produced by prostatic obstruction, either benign or malignant, but it may have its origin in any other obstruction of the bladder outlet, such as bladder neoplasm or foreign body, stricture of the urethra; and ureter and kidney defects.

These latter conditions may produce the same problem, but usually to a lesser degree, because they are less insidious in their development than prostatic obstruction, and because the patients are usually younger and their general condition therefore usually less impaired than in the prostatic group.

Renal urinary retention, dependent upon ureteral stones, strictures, kinks or aberrant blood vessels, or lesions in the kidney, produces the same general problem of renal impairment as does obstruction in the lower urinary tract, except that these lesions are often unilateral, and with the presence of a healthy opposite kidney may not be expected to exert so profound an effect as when both kidneys are damaged.

No matter how urinary retention is produced, whether by obstruction in the lower urinary

tract, or in the ureter or kidneys, the effect is renal impairment, varying only in degree. The important feature is that with renal impairment there results faulty renal elimination, the degree of which must be determined by the various renal function tests.

With impairment of the renal activity, the kidney is unable to take from the blood stream the nitrogen waste products in the same degree that it does when in a normal state, and the amount of the retained nitrogen within the blood may be accurately estimated by blood chemistry.

Because of faulty renal secretion there results an increased demand upon the circulatory system, and the cardio-renal complex, due to damaged kidneys, so well recognized in certain forms of kidney disease, results. This change in the circulation is, however, but seldom appreciated as dependent upon urinary retention, and the high blood pressure commonly associated with urinary retention due to prostatic obstruction, for example, has too often been ascribed entirely to blood vessel changes incident to age, when in reality it may depend in large measure upon damaged kidneys.

The influence of urinary retention upon the circulation was recently pointed out by O'Conor (Arch. Surg.. Sept. 1920, and Jour. Urolog., 1923, X 135. This contribution, now corroborated by many observers, is fundamental in its importance. It is now appreciated that obstruction anywhere in the urinary tract may be considered as a cause *per se* of a high blood pressure and increased cardiac burden.

In addition to the deleterious effect on the circulation, particularly the myocardium, there occur the more indirect manifestations, in the gastro-intestinal and nervous systems, all of which may be recognized as signs of uremia.

It is this series of changes that make an individual a poor surgical risk, no matter for what reason surgical intervention is undertaken; and the failure to recognize renal impairment, especially in patients of advanced years, may be held responsible for many deaths.

Renal function tests and blood chemistry are now at the disposal of all, quite as much as urinalysis and blood pressure determinations, and should be a part of the pre-operative investigation of every patient, where there is the slightest reason to suspect diminished renal efficiency. If this principle is adhered to there will be fewer unexpected and perhaps unexplained fatalities following surgical procedures.

Urinary retention, of any type, once recognized, requires primarily the relief of the obstruction, to permit the kidneys to regain, as far as possible, their normal function. Anything done to support the kidneys and circulation, without first removing the cause of urinary stasis by some means, non-operative or operative, will result in transitory benefit or complete failure.

In connection with prostatic obstruction, the most common lesion producing urinary obstruction, the secondary changes in the kidney and the circulatory system, have come to be quite generally appreciated; and the surgeon has come to the realization that relief of the obstruction by constant drainage, either attained by an indwelling catheter or by suprapubic cystotomy, is the means to the end of bringing about renal and circulatory adjustment.

This has become so well established that the sequence of thought in connection with prostatic obstruction should be: a resulting bladder residual urine producing kidney back pressure and consequent deficient renal elimination; which in turn causes retention of waste nitrogen products in the blood, and resulting in increased activity on the part of the circulatory system, particularly the heart, in its endeavor to compensate, by greater activity, for the inability of the kidneys to do their work.

Having removed the obstruction wherever located, and so having overcome stasis, the kidneys are permitted to regain efficiency commensurate with the degree of damage they have sustained. Other measures may then be employed to aid in the process of recovery. Primary in this connection is saturating the body with fluids to the physiological limit; by mouth when possible, and when not, by the duodenal tube by rectum, sub-cutaneously, or intravenously.

By saturating the body with fluids to the physiological limit is meant to the point just below its reflection upon the circulatory system. If the physiological limit is exceeded, edema will result, and is evidence that the kidneys are eliminating to their maximum ability. One hundred ounces in twenty-four hours may be regarded as a minimum allowance, and with rare exceptions the intake may safely range between one hundred and fifty and two hundred ounces.

In the presence of circulatory deficiency, marked by the usual signs of decompensation, and in particular by the diminished secretion of urine because of failing circulation, digitalis becomes of the greatest value. It supports the myocardium and raises the blood pressure, and in consequence the kidneys secrete with greater activity. Thorough digitalization of this type of patient is a measure of the greatest importance, and one which is too often neglected. Faulty kidney secretion and faulty cardiac activity may further be improved by the use of caffein, preferably in the form of caffein sodio-benzoate; and the free drinking of coffee, tea and cocoa finds a place in the treatment not only as a food and fluid, but also as a cardiac and renal stimulant.

The employment of urinary antiseptics in the presence of infection, and also as a prophylactic

measure, is helpful. It must be realized, however, that if urinary antiseptics are used they must be given in large doses, as their antiseptic action on the urinary tract will be greatly diminished in the presence of a large fluid intake. They should not be continued if they disturb digestion, and certainly should not be continued under this circumstance at the sacrifice of fluid. Hexamethylenamin is still the best available urinary antiseptic and should be given alone in the presence of an acid urine, and if the urine is alkaline should be combined with enough acid sodium phosphate to render the urine acid, as Hexamethylenamin has no antiseptic value except when the urine is in an acid state.

In *conclusion* it is hoped that I have given a conception of what urinary retention is in its broad sense. I have tried to describe how it is dependent upon stasis in any part of the urinary tract, and that such stasis, alone or associated with renal infection, results in faulty kidney elimination; that in consequence waste nitrogen products accumulate in the blood; and that renal deficiency throws extra work upon the circulation.

The means of recognizing this combination of conditions is available by a careful complete examination of the urinary tract and its secretion; by blood chemistry and renal function tests; and by investigation of the circulatory system.

The treatment is directed primarily towards relieving the obstruction and stasis, either by non-operative or operative means; that the kidneys may be improved by appropriate measures after the stasis has been relieved; and these measures include forcing fluid intake, catharsis, circulatory support, and the use of urinary antiseptics.

Dr. Richard F. O'Neil, Boston: Dr. Cunningham's paper is very suggestive and, taken in its broad sense, means the application of the principles employed for a long time in urological surgery—particularly that of the prostate—and to surgery in general, in the presence of renal embarrassment.

There are many cases requiring operations which have some concomitant lesion of the kidney or bladder, resulting in faulty renal elimination, which makes them poor risks for anaesthesia and surgery. Such cases require more than a routine examination of the urine. They should have renal function tests and blood chemistry estimations. In fact, these tests are within the scope of every well-equipped laboratory and should be routine in every operative case. If the phthalein output is low, and the N. P. N. high, or both, suitable measures should be instituted to overcome toxemia and increase elimination. These, as Dr. Cunningham has said, consist in "increase in amount of fluids, diuretics, and digitalis—and, in some cases, drainage." The application of these principles to the reëstablishment of the balance between the circulatory and renal systems in the retention, both renal and vesical, of prostatic obstruction is too well known to require further comment.

I believe that some of the unexplained postoperative deaths, and many of the so-called stormy convalescences marked by hiccough, vomiting, distention, disorientation, etc., are due to a more or less unrecognized uremia, and that such dangers can be greatly minimized by careful pre-operative study and treatment of urinary tract.

Dr. John W. Keefe, Providence: Dr. Cunningham has given us some very valuable views which we may well take to heart. The fact that elimination of poisons can be effected by the kidneys, by the intestines, by the respiratory tract and by the skin should be kept in mind. We should not alone cause elimination through the kidneys, but also by free saline catharsis and attention to the skin. This is one very important phase which is often disregarded.

With reference to the effect of retention I have in mind a man whom I saw recently. I first attended him eight years ago. He was sent by his physician who lived some twenty miles away. The doctor told me he had cancer of the stomach. The man had lost forty pounds and had been unable to keep any fluid in the stomach for eight weeks. When I examined him, I noticed that there was a prominence over the pubes which to the hand felt like a large fibroid. I thought he had retention of urine and catheterized and found that that was the cause of this great mass felt above the pubes, although he had told me he never had any trouble, and that his urine often came too freely. I concluded he had retention of urine. I then examined his prostate and found he had a very large one; so I inserted an indwelling catheter, and he never vomited after the urine was withdrawn. Within a short time we were able to do a suprapubic operation for drainage, draining him for about ten days; then we removed his prostate. But to look at him, with his loss of forty pounds and his cachetic appearance, one would think that he had cancer of the stomach. One should not only investigate the urinary tract but other organs. It is a pleasure for me to find, at this period of medicine when specialists are confining themselves too exclusively to one part of the human body, Dr. Cunningham emphasizing the study of the circulation and the heart and urging that attention be paid to other parts of the body as well as the urinary tract.

Dr. John H. Cunningham (closing): The real message which I have tried to weave into this paper has two particular points. One is that any patient, who is to undergo a surgical

procedure in which there are signs of acute or chronic uremia, should have employed the usual methods to determine the renal status by renal function tests and blood chemistry. The failure to appreciate chronic uremia is not infrequently a matter of serious consequence in conjunction with other maladies.

The other point was illustrated this morning by Dr. Kelley, who fed his peritonitis patient large amounts of water through the duodenal tube. The saturation of the body with fluids to promote renal elimination in cases of sepsis or toxemia from any cause, I think may be considered one of the most important contributions which the urologist has given to general medicine.

# ORIGINAL ARTICLES

## BLADDER INVOLVEMENT IN DIVERTICULITIS OF THE SIGMOID*

BY FLETCHER H. COLBY, M. D., BOSTON, MASS.

WITHIN recent years diverticulitis of the sigmoid has been recognized as an important surgical problem. Medical literature contains numerous descriptions of the condition. Little, however, has been written concerning the importance of diverticulitis to the urologist through the involvement of the urinary bladder. It is from this aspect that we wish to discuss diverticulitis, illustrating certain of its features by two recently treated patients.

Although the disease may occur in any portion of the large or small bowel, we shall confine our consideration of the condition to its presence in the sigmoid, where it is found with greatest frequency. The pathological changes are so often limited to this one region that the term diverticulitis generally refers to diverticulitis of the sigmoid. Acquired, or false diverticula, differ from the congenital variety of sac in that the latter is usually of a larger size and has a wall composed of all the intestinal layers.

By a weakening in the walls of the sigmoid small hernial outpocketings of the mucosa occur A favorite place for these protrusions is in the appendices epiploicae. These protrusions may number from one to a hundred, or more, and vary from microscopic size to one or two centimeters in diameter. Seldom do they attain any considerable individual dimensions. Their presence may be very difficult to detect, because of their not infrequent extreme minuteness. Gas within the bowel and an accumulation of intestinal contents within the sacs causes them to enlarge gradually. The muscle layer becomes thinned out to complete obliteration, so that only an atrophied mucosa and peritoneal covering remain. One to several inches of the sigmoid may be studded with diverticula. Often they stop abruptly at the rectum, perhaps because of the stronger musculature in this structure. Inflammatory changes are prone to take place due to the stagnation of fecal material in the sacs, favoring the formation of pus and abscesses. Associated with this process there is often present an inflammation of the surrounding tissues, a peridiverticulitis. There results very marked increase in connective tissue, and the gradual growth of an appreciable tumor. Dense adhesions are formed through which an abscess may burrow to adjacent organs, causing fistulae into adherent bowel or other neighboring structures. In a considerable number of cases such fistulae occur between the bowel and the bladder.

The frequency of such fistulae is shown in the series of three hundred and twenty-four cases reported by Maxwell Telling and Gruner in which there were thirty-eight instances of bladder fistulae, twenty-five of which were of certain, and thirteen of very probable diverticular origin. The same authors mention another series of two hundred and eighty cases of diverticula in which there were thirty-three instances of adhesions between the bladder and intestines.

The forms of the disease have been classified as follows:

1. Diverticulosis: to denote the grouping of the small inflamed sacs in a portion of the bowel.
2. Diverticulitis: the inflammatory reaction within the sacs.
3. Peridiverticulitis: the surrounding inflammatory reaction of three common varieties.
   (a) Fibroplastic, with the formation of a tumor mass.
   (b) Suppurative.
   (c) Perforating, with bladder fistula and generalized peritonitis.

Diverticulitis is usually a disease of adult life, found most frequently in well conditioned or even obese individuals who are for the most part beyond middle age. It is far more common in men than in women. The symptoms are characteristically varied, as is to be expected from the multiplicity of the lesions, being subacute or chronic, with exacerbations and remissions constituting a feature of the disease.

*From the Urological Clinic of the Peter Bent Brigham Hospital.

The simple, uninflamed diverticular sacs cause no symptoms, but with the advent of inflammatory changes, symptoms arise. Vague abdominal uneasiness increasing to actual pain in the lower quadrant of the abdomen may be the patient's first complaint. Tenderness in this region, leucocytosis, and a moderate amount of fever, have occasioned the diagnosis of left sided appendicitis in a number of cases. The presence of a smooth, tender, sausage-shaped tumor mass in the region of the colon or sigmoid may be detected on palpation. The mass may disappear, with a cessation of symptoms in the favorable event of the draining of an abscess into the lumen of the bowel, or the discharge of a fecal accumulation. Marked loss of weight or any degree of emaciation is not the rule even in the chronic cases. In fact, sufferers from diverticulitis are usually well nourished, except in those instances where peritonitis or other severe secondary changes are present. Periods of constipation may alternate with diarrhea or the passage of large quantities of gas. In the chronic cases a narrowing to occlusion of the bowel causes a persistent constipation, or total obstruction. When the inflammatory mass adheres to the bladder, there arises at first a vesical irritability with increased frequency of urination. Actual communication between the bowel and bladder results in the passage of gas and feces through the urethra, and causes marked cystitis accompanied by periodic attacks of frequent and painful urination. Pneumaturia is a characteristic sign of the establishment of a fistula, and occurs in but few other conditions, among which are the fermentation of urine containing sugar, cystitis caused by gas forming bacteria, and malignant disease with erosion involving the bladder and intestines.

The intestinal symptoms which occur in diverticulitis with a vesico-sigmoidal fistula may easily be overshadowed by those of the marked bladder inflammation. Vague abdominal distress may or may not have been previously present. Thus the history is often of little help in making the correct diagnosis. Careful cystoscopic examination sometimes reveals only the presence of severe generalized cystitis, a foul urine full of pus, and a bladder mucosa that is intensely inflamed without any definite sign of a fistulous opening. On the other hand, the mouth of the fistula may be observed in the mucosa with gas issuing from it into the bladder. Together with the cystitis there is frequently found a pyelitis of one or both kidneys. It is an easy mistake to consider the infection in the renal pelves as the underlying cause of the cystitis. But of course measures which ordinarily give relief in an infection limited to the urinary tract will fail to have any lasting effect on the chronicity of a cystitis due to a fistulous communication with the bowel.

X-ray studies of the gastro-intestinal tract, especially the barium enema, by filling the sacs, frequently reveal the presence of diverticula. In the symptomless diverticulosis, the pedunculated sacs filled with the opaque substance are sometimes found by accident in the course of a routine study of the gastro-intestinal tract, where other pathological processes are present or suspected. Because the communication between the bowel and the bladder may be very small, it is unlikely that there will be any x-ray evidence of such a fistula. Remnants of the barium are sometimes passed in the urine several hours after the enema. This occurred in our cases, and served in itself to verify the diagnosis.

The question of the presence of carcinoma is one which usually arises when one has to deal with diverticulitis and a correct preöperative differentiation between the two conditions may be impossible. In twenty-seven cases of diverticulitis reported by Mayo cancer was present in seven. The long duration of symptoms, together with the condition of the patient, is against malignant disease in these cases. Examination of the bowel with the sigmoidoscope and the x-ray aid in making the diagnosis. When a vesico-sigmoidal fistula exists, cystoscopic examination is of great help in differentiating the simple inflammatory fistula from the irregular, infiltrated tract caused by cancer.

The treatment of diverticulitis and its associated lesions is surgical. The type of operation depends upon the nature of the lesions, no one operation being suitable for all varieties of the disease. In the obstructing form of this condition, where peridiverticulitis is present with a dense fibrous tumor mass, resection and anastomosis are demanded. Some cases lend themselves to simpler measures, but the difficulties which are encountered in undertaking a plastic operation on the diseased bowel may be insurmountable.

In order to give the diseased structures a complete rest, a preliminary colostomy or cecostomy should be performed. Colonic irrigations through the artificial opening aid in clearing out the affected sigmoid and diminish the inflammation. Cases of a rather mild degree of involvement not infrequently have been cured in this manner, a secondary closure of the stoma being made when the symptoms have ceased. After colostomy or cecostomy, the diseased portion of the sigmoid may be resected and an anastomosis made with some assurance of success. The colostomy may be closed when there is evidence that the anastomosed bowel has healed, such evidence being obtained by means of rectal irrigations or barium enemas. Where a fistulous communication with the bladder or other organ has existed, a repair and closure is made coincident with the resection and anastomosis. The preliminary colostomy serves the purpose

of deflecting the fecal current from its ordinary channel and prevents infected material from coursing any longer through an existing fistulous tract. In patients with vesico-intestinal fistula the inflamed bladder is thus given an opportunity to heal and the cystitis rapidly disappears.

The following two cases are illustrations of diverticulitis of the sigmoid with bladder involvement, and bring out some of the points of the foregoing discussion.

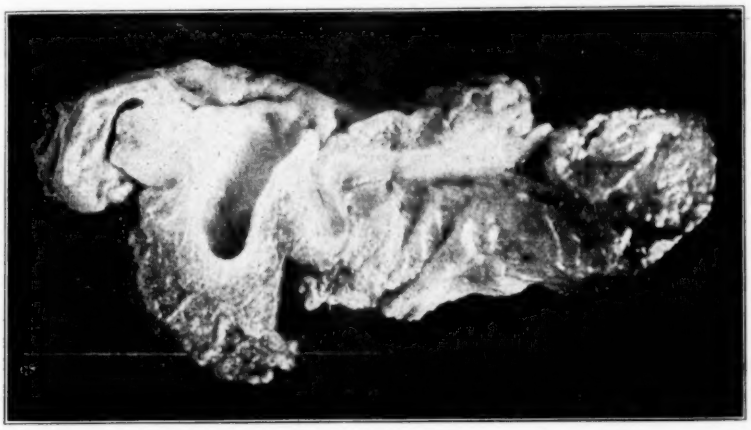
Case I. Surg. No. 12785. A civil engineer, 67 years old, in good general condition, was admitted to the hospital complaining of cloudy urine. He had always been well until three weeks previously when his urine had become foul and had contained brown, flaky material. Except for a period of burning urination during the first week, he had had no discomfort, and there had been no symptoms referable to his gastro-intestinal tract except constipation in the past.

Examination showed a patient in good physical condition who had lost no weight. An indefinite, non-tender mass was felt in the left lower quadrant of the abdomen. His pulse, temperature, and respirations were normal. The urine contained a large amount of pus. The blood Wassermann was negative. Cystoscopic examination showed a bladder mucosa that was everywhere acutely inflamed. The base of the bladder appeared raised above its usual level, and in the midline was a small, discrete, reddened area of mucosa with oedematous edges. A bilateral pyelitis was present. Under the impression that this was an instance in which the bladder was involved secondarily to infected kidneys, lavage of the renal pelves and bladder was instituted. There was no appreciable improvement in the patient's symptoms. It was observed that the urine was becoming more foul, and that it contained brown, fecal material after the patient had had a bowel movement. Cystoscopy was again undertaken under the impression that a communication existed between the bowel and the bladder. No fistula was seen, however, and a cystogram failed to show any sinus tract leading from the bladder. A barium enema was then given which showed a definite irregularity in a segment of the lower sigmoid just above the bladder. Several hours after the barium enema, barium was present in the voided urine. Because of the acute onset of the patient's symptoms, the palpable mass in the region of the large bowel, and the x-ray evidence, it was thought that the patient had cancer of the sigmoid. An exploratory operation revealed a mass at the beginning of the sigmoid which was not at all characteristic of malignant disease. A preliminary colostomy was performed as a preparatory measure. Ten days later the abdomen was again opened and a more thorough examination made. The sigmoid was found to be involved by a mass inflammatory in appearance, with several diverticular tabs. The intestine was thickened for about two inches and was adherent to the bladder. Upon separating the bladder from the intestine, a small fistulous tract between the two was found. The bladder end of the fistula was closed. The bowel was thickened on its outer surface and the lumen narrowed so as to barely admit the little finger. The thickened portion was excised, and then it was decided that a plastic repair could be satisfactorily done. The excised elliptical opening in the bowel was closed after the manner of a Heinike-Mickulicz plastic on the pylorus, so that a good lumen resulted. In order to give the repaired bowel a chance to heal and become tight, the colostomy was left open. The patient made an excellent recovery from the operation, and convalescence was without untoward event. He was discharged in good condition twenty-four days after the second operation. Two weeks later the patient returned and the colostomy was successfully closed. When he was seen two months after discharge from the hospital he was in excellent general condition. Again, six months later, the patient reported. He had gained fourteen pounds, and felt and looked generally much better. Although his urine was still cloudy, his bowels were acting normally, and he was free from symptoms.

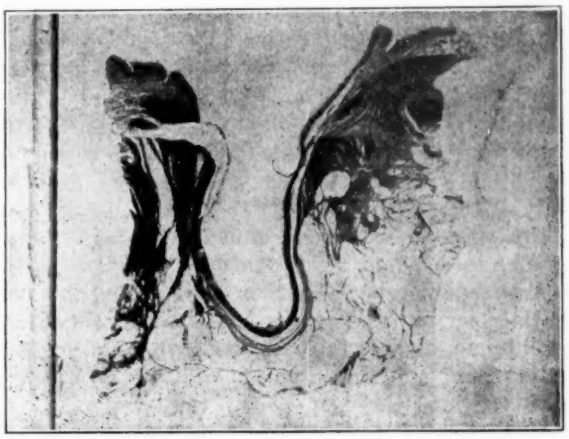
Case II. Surg. No. 12948. A second case of the same nature was that of a tailor of 64 who complained of backache and cloudy urine. Since a severe attack of "grippe" eighteen months previously, he had had frequent and urgent urination, with foul urine. In every other particular he felt well. A short time after the onset of the bladder symptoms he began to pass gas by urethra. The bladder trouble was intermittent in character, growing progressively worse. He had had no gastro-intestinal symptoms worthy of note. Physically he appeared in good general condition, although there was a moderate degree of arteriosclerosis, a right-sided epididymitis, and tenderness in the region of the right kidney. His pulse, temperature, and respirations were normal. A slight leucocytosis was present, and the urine contained pus in abundance. Cystoscopic examination showed a subacute cystitis and a right pyelitis, due to the bacillus coli. X-ray showed no sign of stone or abnormality in the outline of the renal pelvis. The case was thought to be one of pyelitis with secondary involvement of the bladder. The patient was started on a course of pelvic lavage which resulted in a prompt improvement in the symptoms. This improvement continued for a short time, but the symptoms of bladder infection soon reappeared. Because he continued to pass gas by urethra the existence of a communication between the bladder and the intestinal

tract was suspected. Barium studies were made and revealed a definite irregularity in the pelvic portion of the sigmoid with numerous diverticular outpocketings. A few hours after the patient had been given a barium enema, barium was passed by urethra. Thus, a fistula between bladder and bowel was definitely proved to exist. Cystoscopy was again performed, and showed a small, punched-out, inflamed area in the posterior wall of the bladder; undoubtedly the opening of a vesicosigmoidal fistula. Upon exploring the abdomen at operation an area of diverticulitis of the sigmoid was found which united the upper sigmoid to the bladder and surrounding structures. The bladder and bowel were separated, opening a fine tract which united the two. This fistula was hardly large enough to admit the ordinary silver probe. Both openings, in bladder and bowel, were then closed and the suture lines separated by omentum. Convalescence was slow and complicated by chills and fever. In a short time the patient was again passing gas by urethra, and it was evident that the fistula had become reëstablished. It was decided to prepare the patient for further operation by making a cecostomy, and irrigating the bowel daily. In this manner his condition was sufficiently improved to enable him to undergo a resection of the diseased bowel and an end-to-end anastomosis. The reëstablished fistula was again closed. Convalescence was entirely uneventful, and in three weeks the cecostomy was closed without difficulty. The patient now gained strikingly in health, and the bladder infection very rapidly subsided. He was discharged five weeks after the last operation, feeling perfectly well. Reporting two years later he said, "I am glad to inform you that I have not felt better for years before my operation, and it has made a new man of me." His bowels were functioning normally and he had had no further bladder symptoms.

Both of these cases are examples of the insidiousness with which diverticulitis may develop. They further illustrate, in a striking manner, the fact that there may be nothing in the past history of the patient to suggest a lesion of the gastro-intestinal tract, the symptoms which bring the patient to medical attention being those due to secondary pathological changes. In the two examples which we have cited these symptoms were entirely of the urinary tract. In such cases the correct diagnosis may be reached only by means of a persistent search for the etiological factor of the cystitis, aided by a knowledge of the relationship between diverticulitis of the sigmoid and a fistulous communication with the bladder.



CUT 1. Mass removed at operation in Case II, showing two diverticula. The edematous mucosa is seen at the upper margin of the specimen. The diverticulum at the left has been fixed as an open sac and directly at its right is seen a smaller sac communicating with the mucosa. Adherent omental fat is abundant and infiltrated with dense fibrous tissue.



CUT 2. Low power section of a small diverticular tab removed from Case II. The disappearance of the muscular layers is shown, the pouch being covered only by serosa and an atrophied mucosa.

The first of these cases presented a favorable opportunity for effecting a cure by comparatively simple surgical measures. In the second instance the more extensive involvement of the bowel necessitated excision of the diseased area and an anastomosis. Probably the usual severe case of diverticulitis is treated to better advan-

tage by the latter of the two methods, although each case presents a problem of its own in surgical treatment. Colostomy or cecostomy as a preliminary measure makes the ultimate result of any operation much more certain of success.

BIBLIOGRAPHY

1 Bensaude, R.: Les Diverticules du Gros Intestine. Ann. de méd., 1923, xiii, 432-458 and 547-574.
2 Chute, A. L.: Two Cases of Vesico-intestinal Fistula Due to Diverticulitis of the Sigmoid. Trans. Am. Assn. Genito-Urinary Surgeons, 1911, VI, 86-98.
3 Grant, Samuel G.: Diverticula, Diverticulitis and Peridiverticulitis of the Small Intestine, Cecum, Colon, Sigmoid Flexure and Rectum. Jour. Am. Med. Assn., 1921, LXXVII, 1415-1420.
4 McGrath, B. F.: Intestinal Diverticula. Their Etiology and Pathogenesis, with a Review of Twenty-Seven Cases. Surg., Gynec. and Obst., 1912, XV, 429-444.
5 Mayo, W. J., Wilson, L. B., and Griffin, H. Z.: Acquired Diverticulitis of the Large Intestine. Surg., Gynec. and Obst., 1907, V, 8-15.
6 Mayo, W. J.: Diverticulitis of the Large Intestine. Jour. Am. Med. Assn., 1917, LXIX, 781-785.
7 Mayo, W. J.: Diverticulitis of the Sigmoid. Virginia Med. Month., Nov., 1921, XLVIII, 427-432.
8 Mayo, W. J.: Diverticula of the Gastro-Intestinal Tract: Their Surgical Importance. Jour. Am. Med. Assn., 1912, LIX, 260-264.
9 Telling, W. H. Maxwell, and Gruner, P. C.: Acquired Diverticula, Diverticulitis and Peridiverticulitis of the Large Intestine. Brit. Jour. Surg., 1916-1917, IV, 468-531.

# RUPTURED UTERUS—REPORT OF A CASE

BY LOUIS E. PHANEUF, M. D., F. A. C. S., BOSTON

RUPTURE of the uterus is one of the most severe accidents of pregnancy and labor; the condition occurring much less frequently with the former than with the latter. The solution of continuity may occur in the body of the uterus, or in the lower uterine segment. The rupture may be complete or incomplete; complete when it involves all the layers of the uterus, and incomplete when it does not go through the whole thickness of the uterine wall. In the lower segment the incomplete tear usually involves the mucosa and musculature respecting the peritoneum; the same condition may obtain in the body of the uterus, while in the rupture following ablatio placentae, and utero-placental apoplexy, the rent may extend through the peritoneum and muscle, down to, but not including the mucosa; I have observed two such cases.

## CASE REPORT

Mrs. C. F. Hospital No. 10846, 34 years old. Housewife, born in Ireland; seen in consultation in her home with Dr. Robert N. Daley on July 3, 1924.

*Complaint*:—Uterine hemorrhages. Pregnancy of about 5 months' duration.

*Family History*:—Father died of septicemia; mother living and well; one brother died of diphtheria at 7 months; one brother and one sister living and well; no chronic diseases in the family.

*Past History*:—Mumps, measles and scarlet fever during childhood. She has had frequent attacks of tonsilitis. Her tonsils were removed 8 months ago. She had a wen removed from the left side of her neck some years ago.

*Menstrual History*:—Catamenia established when 15; regular, 28 day type; duration 5 days; 2 napkins daily; no pain; no clots; last period *January 25, 1924;* lasted 5 days, the flow being the usual amount.

*Marital History*:—Married 12 years; 5 children, the second premature at 7 months, the others at term.

*Labors and Puerperia*:—Normal.

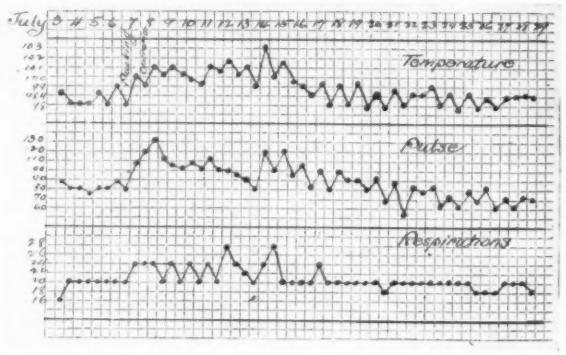
*Present Illness*:—Eleven days ago, June 17, the patient had a severe attack of flowing during her sleep, and she flowed for 5 days. The flow began again on June 28 and continued since then intermittently. There had been no pain at any time. The patient had not felt life.

*Appetite*:—Good. *Bowels*:—Regular.

*Micturition*:—Dx6 No dysuria or hematuria.

Nx0

*Physical Examination*:—The patient showed signs of severe anemia. The heart showed slight




systolic roughenng and the skipping of an occasional beat.

*Abdominal Examination*:—Negative except for the fact that the uterus was felt slightly below the level of the umbilicus; no fetal heart sounds could be heard. A rectal examination was made because the patient was flowing; this showed the cervix to be closed and the uterus the size of a 5 months' pregnancy. A tentative diagnosis of placenta previa was made and the patient was referred to the Carney Hospital where she was admitted on July 3, 1924. She was treated expectantly until July 7, in the hope that the flowing might stop. During this time she flowed but little during the day, but had considerable hemorrhage during the night. Since

no improvement was apparent and since I was convinced that I was dealing with a placenta previa and a dead fetus, I decided to terminate the pregnancy.

*July 7, 1924.* Light ether anesthesia.

The cervix was badly lacerated and filled with scar tissue; it also showed considerable erosion. It was dilated to admit a finger, although it was not taken up. Upon the introduction of the finger in the uterine cavity a central placenta previa was easily recognized. A thin, sanguineous,

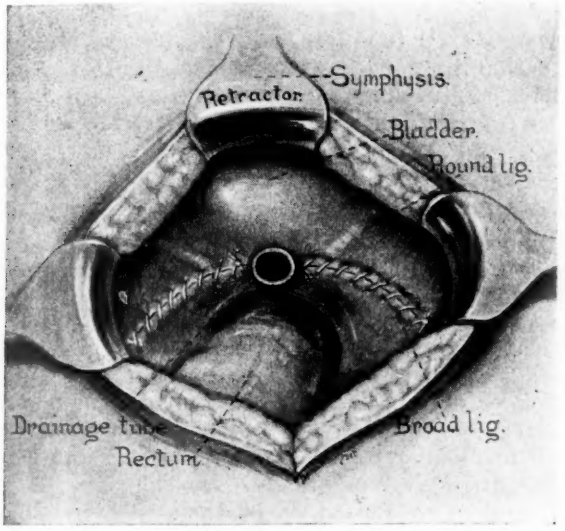



FIG. 1. Hysterectomy completed. Raw areas covered with peritoneum. Drainage tube from peritoneal cavity to vagina.

foul smelling discharge was escaping through the os. The cervix was brought down; the uterine cavity packed with 2 sterile bandages, 2 inches wide and 3 yards long. The vagina was packed with iodoform gauze and the patient was returned to her bed in good condition. Contractions started during the evening. At midnight the temperature was 99°F; the pulse 110, and the respirations 26. At 8 A. M. July 8, the patient was in great pain; she was taken to the operating room at 8:30 A. M. Under light ether anesthesia the vaginal and uterine packs were removed and the cervix was still one finger dilated and not taken up. Since there was bulging of the anterior vaginal wall, a small transverse incision was made at the vaginal attachment to the cervix; considerable blood clot escaped through this, and it was found that the lower uterine segment was ruptured in the median line, for an area of about 4 inches. The bladder was catherized and clear urine was obtained. At this time the patient went into extreme shock; no pulsations were felt at the wrists, and she showed marked signs of air hunger. The vagina was quickly packed with iodoform gauze; she was given oxygen, and 1000 c.c. of salt solution was injected under the breasts. She reacted somewhat after this. During this time the patient's blood had been tested against Dr. Daley's, and since they had been found to match a transfusion of 600 c.c. was performed, Dr. Daley acting as the donor. She was then given a hypodermic of morphine sulphate, grs. 1/6, and she was returned to her bed. Her pulse was now 136, and of good quality; two hours later it was 126. The patient was again seen by me at 5:30 in the afternoon. She now looked much better and her pulse rate was 120. A laparotomy was decided upon.

*July 8, 1924.* Operation, Dr. Phaneuf. Ether anesthesia—Dr. N. N. Morse. Median abdominal incision from the symphysis to the umbilicus. Upon opening the peritoneal cavity a large tumor was found between the bladder and the cervix, and the fundus was firmly contracted behind this. The bladder peritoneum was incised and the bladder was separated from the uterus; a five month macerated fetus, together with the placenta and a large amount of blood clot were removed from the cavity which they occupied, between the bladder and the uterus. A median rent about 4 inches long was found in

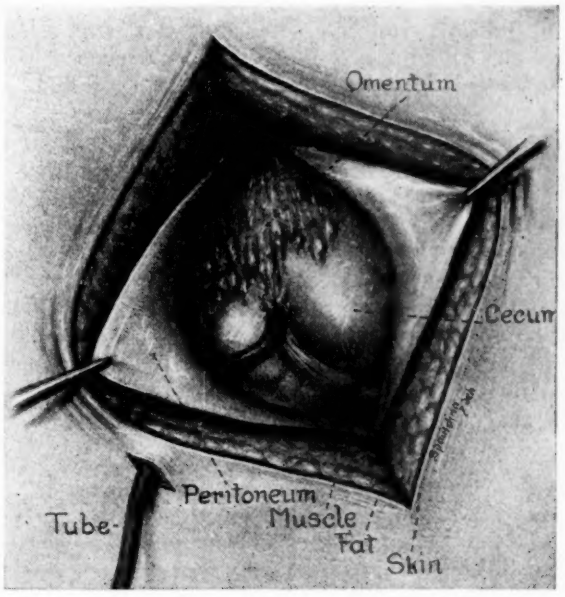



FIG. 2. Cecostomy. Catheter held in cecum by purse-string suture of No. 0 chromic catgut. Exit of catheter through stab-wound. The catheter is passed through the omentum if the latter comes down without tension.

the median line. A Pean clamp was applied to each broad ligament in such a way that it included the ovarian, the round ligament, and the uterine vessels on each side, then the uterus and adnexa were removed. The uterus was amputated below the level of the internal os, and the cervix was reconstructed by closing the remainder of the rent anteriorly with interrupted catgut sutures; the cervical canal was closed with similar sutures placed antero-posteriorly; the broad ligament on each side was sutured with a running stitch of chromic catgut. A tube drain was placed between the bladder and the cervix extending into the vagina through the small transverse incision previously made in the anterior vaginal wall, and all the raw areas were

covered over with peritoneum, leaving a central opening for the tube drain into the peritoneal cavity—Figure 1. A second rubber tube was placed in the culdesac of Douglas making its exit at the lower angle of the abdominal incision. The colon and the ileum were markedly distended. For this reason a cecostomy was performed. A No. 28 French, soft rubber catheter was introduced into the cecum and passed out through a small stab wound on the right of the median incision—Figure 2. The abdomen was closed in one layer, using through and through silk-worm gut sutures. The patient was on the table 30 minutes, and was returned to her room in good condition, with a pulse of 120.

*Convalescence.* The convalescence was very satisfactory. For the first three days the patient was placed in the Fowler position, given small doses of morphia; Digalen in 20 minim doses, every four hours, and 8 ounces of 5% Glucose in salt solution through the enterostomy tube every four hours. This solution was readily absorbed; there was no gaseous distention at any time, and the patient was given her first low suds enema on the third day. The vaginal drainage tube was removed on the fourth day, and the abdominal tube on the eighth day; the sutures in the transfusion wound in the arm were also removed on this day. On the eighth day the catheter in the intestine came out, and the fecal fistula was closed on the twelfth day. The intermediate silkworm gut sutures were removed on the tenth day, and the stay sutures on the eleventh.

The patient was allowed out of bed on July 22, 14 days after operation. On July 29, 1924. the day of her discharge, the following note was made:—"Median incision and stab wound well healed; the vaginal drainage tract between the bladder and the cervix is healed; the cervix is high in the vault; there are no masses or areas of tenderness in the pelvis." The patient reported two weeks later that she was free from discomfort, and doing well. In October, 1924, the patient reported that she had gained in weight and had no discomfort.

SUMMARY

In this case the probable cause of rupture was the growth of placental villi in the anterior wall of the lower uterine segment, because of the placenta previa. The rigid cervix filled with scar tissue failed to dilate with the uterine and the vaginal tamponade, and the weakened lower segment ruptured under the influence of the uterine contractions. The administration of the salt solution by hypodermoclysis, allowed the patient to react until she was transfused, and the transfusion prepared her for the hysterectomy. Of all the measures used in this case, one of the most important, in my mind, was the enterostomy. She had marked intestinal distention, which would have necessitated active treatment soon after operation. Experience has shown that a markedly shocked patient is in no condition to stand the active measures usually employed to control this condition, whereas the cardiac embarrassment and the discomfort from distention may necessitate choosing the active treatment as the lesser of the two evils. Following the cecostomy this patient was left undisturbed for three days, and thereby her strength was saved to as great an extent as was possible under the conditions, and I feel that her recovery was largely due to this latter procedure.

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# MEDICAL PROGRESS

## PROGRESS IN THE KNOWLEDGE OF BLOOD CONDITIONS

*By Members of the Staff of the Medical Service of the Collis P. Huntington Memorial Hospital of Harvard University*

THERE have been many papers published concerning the blood and its disorders within the past two years. In spite of this there are few important advances in our knowledge. This review indicates the nature of the progress, but is not to be considered as a complete synopsis of the subject, and some conditions are not referred to at all.

### PATHOLOGIC PHYSIOLOGY OF THE BLOOD AND THE ANEMIAS

BY RAPHAEL ISAACS

#### PATHOLOGIC PHYSIOLOGY OF THE BLOOD

A considerable amount of work has been expended on the classification of the cells in the circulating blood, and yet much remains to be learned about the origin and significance of many of the cells of the mononuclear group. Cunningham, Sabin and Doan[1] describe the development of the mononuclears of the transitional type as derived from a stem cell of mesenchymal origin in the spleen pulp. Holler[2], in confirming the reticulo-endothelial origin of the monocytes, points out that their variations in number are not parallel to those of the other leucocytes. A diminution in number of these cells in the circulating blood may be the result of storage in the spleen or other organs rather than of a deficient production. Bunting[3] and Maximow[4] have reviewed the present knowledge of the origin and physiology

of the leucocytes, admirably summarizing the more recent work. Piney[5] attributes a lymphoblastic and lymphocytic origin to the plasma cells.

The weight of evidence at present points undoubtedly to the origin of the blood platelets from the megakaryocytes of the bone marrow; even so, this view has not remained entirely unchallenged[6, 7, 8].

Isaacs[9] describes erythrocytes with a single refractive granule as their only differentiated internal structure. These cells are considered to represent a heretofore unrecognized stage in the life of the red blood corpuscles. With the loss of this granule, by extrusion, the corpuscle becomes mature. Fahraeus[10] considers that the colorless erythrocytes, seen under favorable conditions in specimens of blood, represent the final stage in the life of the red corpuscle. Odd shapes of red blood corpuscles may appear in the blood of individuals in whom there is no fundamental blood disease. Poikilocytosis, mentioned in the text books as an evidence of blood destruction, may appear in otherwise normal blood[11, 12] as a familial anomaly. Drinker, Drinker and Lund[13] in a most complete and thorough study show that the capillaries of bone marrow are closed structures and that the normal mature red corpuscles are delivered into the blood stream through the delicate capillary walls.

A number of papers deal with the normal variations in corpuscle number in health and disease. About ninety publications in the past two years deal with various phases of digestive leucocytosis and "hemoclastic shock" or "crisis." The fact, however, that the mere sight of food may stimulate a digestive leucocytosis[14] and that there is a rhythmic leucocytosis during the intervals between gastric digestion[15] must be taken into account before conclusions are drawn as to the diagnostic value of such procedures as the hepatic insufficiency tests of Widal.

The leucocytosis after hemorrhage into serous cavities may be of aid in differential diagnosis[16, 17].

Studies of normal individuals show that the hemoglobin percentage may vary from 10 to 26 per cent during the course of the day[18]. A summary of the normal figures for various morphological, physical and chemical data from blood examinations has been compiled from the literature by Gram[19] and is presented in forty-four tables.

Broun[20] found evidence of increased blood destruction after exercise in dogs which had been quiet, but the process was less marked in individuals who had previously led an active life. Aub, Reznikoff and Smith[21] have studied experimentally blood destruction in lead poisoning. They attribute the increased blood destruction in chronic lead poisoning to abnormal brittleness of the red corpuscles affected by the lead.

As to the site of formation of bilirubin, there is still a difference of opinion. Among the more recent articles, Aschoff[22] holds to the more current view that bilirubin may be formed in the blood stream, but Oppenheimer[23] and M'Nee and Prusik[24] conclude from their experiments that the liver is necessary in the process.

About seventy papers have appeared within the last two years on the suspension stability or sedimentation velocity of red blood cells. The literature is extremely confusing and the same disease is listed by some as showing an increased rate of the settling of the red corpuscles in citrated blood in test tubes while others report a decreased rate. It seems probable that the variations are not the result of specific disease characters but of some physicochemical factors, as the electrical charge of the corpuscles (Vorshutz[25]), or the amount of globulin in the plasma (Salomon[26]).

Minot and Spurling[27] have described the changes in the blood after short-wave length Roentgen-ray irradiation and give a summary of the literature. The importance of recognizing the production of lymphopenia and leucopenia is discussed. With the increased use of ultra-violet light therapy, a knowledge of the effect on the blood becomes of importance. There may be a temporary leucocytosis during the course of the first hour, followed by a leucopenia with a relative lymphocytosis[28, 29]. The red cell count, hemoglobin, viscosity, coagulation time and cell resistance apparently remain unchanged, although exposure of blood *in vitro* appears to make it less resistant to hemolysis[30]. Complement becomes reduced[28]. In tuberculous patients an increase in phagocytosis the second hour after the ultra-violet irradiation has been noted, with progressive diminution after the fifth hour, becoming normal in twenty-four hours[31].

The subject of hemagglutination has received much study and Guthrie and Pessel[32], Guthrie and Huck[33] and others have described several hemagglutination blood groups, in addition to the four types of Jansky and Moss. Numerous authors reaffirm the presence of isoagglutinin receptors in the red cells of the new-born. The physical chemistry of hemagglutination and hemolysis has been studied by Isaacs[34] who concludes that the processes follow the ordinary chemical laws. McCutcheon[35] made a similar discovery concerning the locomotion of leucocytes, whose velocity doubled with a rise of 10°C., conforming with Van t' Hoff's law for chemical transformation in this respect. Frequent transfusions do not affect, according to Mino[36], the agglutination properties of blood but increase the hemolytic properties. Drugs do not change the blood group of patients[37].

Studies in the percentage of individuals of various races belonging to the different blood groups show that there may be a different preponderance among white, colored and Chinese peoples[38], [39], [40].


BIBLIOGRAPHY

PATHOLOGIC PHYSIOLOGY OF THE BLOOD

1 Cunningham, R. S., Sabin, F. R., and Doan, C. A.: Proc. Soc. Exp. Biol. and Med., 21:326, 1924.
2 Holler, G.: Folia Haematol., 29:84, 1923.
3 Bunting, C. H.: Physiol. Rev., 2:505, 1922.
4 Maximow, A. A.: Physiol. Rev., 4:533, 1924.
5 Piney, A.: Folia Haematol., 30:12, 1924.
6 Laoh, P.: Med. v. d. Burg. Geneesk. Dienst in Nederlandsche-Indie, 261, 1922.
7 Bedson, S. P.: J. Path. and Bact., 26:145, 1923.
8 Weiksel: Munch. Med. Woch., 71:291, 1924.
9 Isaacs, R.: Arch. Int. Med., 33:193, 1924.
10 Fahraeus, R.: Acta Med. Scand., 60:12, 1924.
11 Huck, J. G., and Bigalow, R. M.: Bull. J. H. Hosp., 34:390, 1923.
12 Sydenstricker, V. P.: J. A. M. A., 81:114, 1923.
13 Drinker, C. K., Drinker, K. R., and Lund, C. C.: Am. J. Physiol., 61:1, 1922.
14 Glaser, F.: Med. Klinik., 16:535, 1924.
15 Boldyreff, W. N.: Bull. Battle Creek Sanit. and Hosp., 19:49, 1923.
16 Wright, A. M., and Livingston, E. M.: N. Y. State Med. J., 23:286, 1923.
17 Stiffel, R. E.: W. Va. Med. J., 17:530, 1923.
18 Rabinowitz, I. M.: J. Lab. and Clin. Med., 9:120, 1923.
19 Gram, H. C.: Am. J. Med. Sci., 168:511, 1924.
20 Broun, G. O.: J. Exp. Med., 37:187, 1923.
21 Aub, J. C., Reznikoff, P., and Smith, D. E.: J. Exp. Med., 40:151, 1924.
22 Aschoff, L.: Klin. Wchnschr., 22:963, 1924.
23 Oppenheimer, E. H.: Bull. J. H. Hosp., 35:158, 1924.
24 McNee, J. W., and Prusik, B.: J. Path. and Bact., 27:85, 1924.
25 Vorschutz, J.: Med. Klinik., 19:269, 1923.
26 Solomon, A.: Zeitschr. f. klin. Med., 99:329, 1924.
27 Minot, G. R., and Spurling, R. G.: Am. J. Med. Sci., 168:215, 1924.
28 Koopman, J.: Deutsch. Med. Wchschr., 50:277, 1924.
29 Sonne, C.: Acta Rad., 2:116, 1923.
30 Watanabe, K.: Jap. Med. World, 4:80, 1924.
31 Verdina, C.: Gior. de. R. Aca. d. Med. d. Torino, 7:201, 1923
32 Guthrie, C. G., and Pessel, J. F.: Bull. J. H. Hosp., 32:426, 1924.
33 Huck, J. G.: Bull. J. H. Hosp., 24:37, 80, 128, 1923.
34 Isaacs, R.: J. of Immunol., 9:95, 1924.
35 McCutcheon, M.: Am. J. Physiol., 66:185, 1923.
36 Mino, P.: Gior. de. Clin. Med., 15:561, 1923.
37 Sipperstein, D. M., and Kvenberg, A. L.: Am. J. Dis. Child., 26:65, 1923.
38 Maniula, S., and Popovicue, G.: Compt. Rend. de l. Soc biol., 90:542, 1924.
39 Gregory, D. A.: J. Lancet, 43:445, 1923.
40 Chi-pan, L.: Nat. M. J. China, 10:263, 1924.


PERNICIOUS ANEMIA

The etiology of pernicious anemia is still unknown. Articles supporting and contradicting Hunter's[1] conception of the anemia as of hemolytic and infectious origin have appeared. Peabody and Broun[2] describe the phagocytosis of red cells by endothelial cells, especially of the bone marrow, and they believe this to be an important factor of blood destruction in this disease. Syderhelm[3] considers intestinal infection as fundamental in the etiology.

Baltisberger[4] and Haden[5] have reported studies of the pathologic physiology of the disease. The increased volume index is an important feature. Pijper[5a] discusses the size of the red cells and their measurement. Elders[6] notes the resemblance to the anemia in sprue. Giffin and Bowler[7] show that among other conditions, infestation with parasites, especially Balantidium coli, may be associated with symptoms like those of pernicious anemia. Familial and hereditary aspects have been stressed by Mustelin[8], Decastello[9], and Meulengracht[10].

Of the symptoms and signs, attention has been recalled to the great frequency of the mental and nervous manifestations[1], [11], [12], [13], [14] the fixation of specific gravity of the urine, with the increase in the night over the day output[15], glossitis[1], [16], low leucocyte count, achlorhydria[17], [18], presence of macrocytes[5], [19], and megaloblasts in the blood stream[20] and the peculiar yellow color of the blood plasma and serum[14].

Transfusion still remains a therapeutic measure to help produce a remission, some authors recommending large, and others very small amounts of blood. The use of the Roentgen-ray to stimulate blood formation[21] is still in the experimental stage. Syderhelm[3] found the contents of the small intestines obtained through a fistula in ten cases to be similar in appearance, odor and bacterial content to that of the large intestine. Winterfield[22], following out the infection and toxemia theory, treated cases with an autogenous B. coli vaccine, but the results were slow and inconstant. The treatment of pernicious anemia by removal at operation of some of the marrow of the long bones[23] received much newspaper notoriety but the good results were inconstant and very temporary.

Hurst[24] presents an excellent article on various aspects of Addison's (pernicious) anemia with 84 references. He discusses the undoubted value of large doses of dilute hydrochloric acid and finely powdered charcoal to decrease the apparent intestinal infection. He also gives a summary of Price-Jones' valuable work on the measurement of the red cells to aid in diagnosis; work confirmed by Minot in unpublished studies.

Metabolic studies by Gibson and Howard[25] suggest that some good may be obtained by the use of iron and vitamin adequate diets. Continued reports reaffirm the value of arsenic. It is difficult properly to evaluate the results of various methods of treatment because of the spontaneous occurrence of remissions.


BIBLIOGRAPHY

PERNICIOUS ANEMIA

1 Hunter, W.: Proc. Roy. Soc. Med. Lond., 16:1, 1922.
2 Peabody, F. W., and Broun, G. O.: J. A. M. A., 82:963, 1924.
3 Syderhelm, R.: Klin. Wchnschr., 3:658, 1924.
4 Baltisberger, W.: Folia Haematol., 28:196, 1923.
5 Haden, R. L.: J. Missouri State M. A., 20:158, 1923.
5a Pijper, A.: Lancet, 2:367, 1924.
6 Elders, C.: Nederl. Tij. V. Geneesh., 58, 2267, 1922.
7 Giffin, H. Z., and Bowler: Minnesota Med., 6:13, 1923.
8 Mustelin: Acta Med. Scand., 56:411, 1922.
9 Decastello, A.: Wien. Klin. Wchnschr., 36:258, 1923.
10 Meulengracht, E.: Folia Haematol., 29:217, 1923.
11 Christian, H. A.: Southern M. and S. J., 84:179, 1922.
12 Hurst, A. F.: Brit. Med. J., 1:93, 1924.
13 Woltmann, H. W.: Am. J. Psych., 3:435, 1924.
14 Riggs, C. E.: Minnesota Med., 7:484, 1924.
15 Stieglitz, E. J.: Arch. Int. Med., 33:58, 1924.
16 Bastai, P.: Haematol., 4:351, 1923.
17 Piney, A.: Brit. Med. J., 1:271, 1924.
18 Wilson, C. R., and Evans, F. A.: Bull. J. H. Hosp., 35:39, 1924.
19 Price-Jones, C.: Guy's Hosp. Report, 74:10, 1924.
20 Piney, A.: J. Path. and Bact.: 27:249, 1924.
21 Bucky, G., and Guggenheim, H.: Berl. Klin. Wchnschr., 1:11, 1922.

22 Winterfield, H. K. von: Münch. Med. Wchnschr., 71:200, 1924.
23 Walterhofer and Schram.: Arch. f. klin. Chir., 128:407, 1923.
24 Hurst, A. F: Medical Essays and Addresses. W. Heinemann, London, 1924.
25 Gibson, R. B., and Howard, C. P.: Arch. Int. Med., 32:1, 1923.

### OTHER ANEMIAS THAN PERNICIOUS ANEMIA

Brown and Roth[1] consider the anemia in nephritis dependent upon defective blood formation rather than upon excessive hemolysis.

Several reports of *aplastic anemia* following arsphenamine and neoarsphenamine have appeared. A similar type of anemia has been reported in roentgenologists[2].

Huck[3], Sydenstricker[4] and others[5] have reported numerous cases of sickle-cell anemia. This is a chronic type of anemia in colored people with the symptoms of severe anemia in some cases, accompanied at times by ulceration of the legs or feet. The red cells on standing *in vitro* assume sickle and elliptical shapes but return to their normal form after forty-eight hours.

Reports from numerous European countries comment on the decrease in the number of cases of chlorosis.

Gallupe and O'Hara[6] emphasize the distinction between puerperal anemia (achronic hemolytic anemia) and pernicious anemia. For the hemolytic anemia of pregnancy they advocate blood transfusion. Hirsch[7] was not able to produce anemia in animals by injection of placenta or embryo substance, suggesting other etiology for anemia of pregnancy.

Piney[8] describes blood pictures due to metastatic tumors in bones. The pictures are of a pseudo-pernicious anemia and pseudo-leukemia type, the changes being independent of the site or histological character of the primary tumor. Hanhart[9], however, points out that only about half of the cases with metastatic tumors in bones show a variation from the normal blood picture.

### TREATMENT OF ANEMIA

Meulengracht[10] emphasizes the value of large doses of iron in anemia, but stresses the importance of removing infection when it is a prime factor. However, some of the organic preparations of iron may pass through the intestine unabsorbed[11] so that one of the simpler inorganic preparations, as Blaud's pills, is preferable.

Minot and Sampson[12] and others[13] found that, contrary to reported benefits, germanium dioxide was of no distinct value in treating anemia. Leake[14] reports the use of bone marrow and spleen substance for anemia, but such treatment is still in an experimental stage.

Transfusion of blood has demonstrated its value in stopping hemorrhage, restoring blood volume and stimulating blood formation in anemia of different types. The use of both whole unchanged blood and of citrated blood have numerous adherents, but the greater possibility of reactions after the citrated method seems evident. The fear that sodium citrate may cause increased bleeding appears unfounded. Sodium citrate given intravenously can aid in checking hemorrhage[15]. When stimulation of blood formation is desired, small amounts of blood at each transfusion have been advocated.

Giffin and Haines[16] have studied the blood of professional donors and conclude that several multiple donations of 500 c.c. of blood, when given at intervals of three or four weeks, are not harmful.

For the control of hemorrhage, in the treatment of anemia from this cause, Mills[17] advocates the use of a tissue fibrinogen made from lung substance. However, if the platelets are markedly diminished, this hemostatic we believe to be ineffective. Our study has shown that it did not influence the number of platelets or the bleeding time in five cases of thrombopenic purpura.

### BIBLIOGRAPHY

#### OTHER ANEMIAS THAN PERNICIOUS ANEMIA, AND TREATMENT OF ANEMIA

1 Brown, G. E., and Roth, G. M.: Arch. Int. Med., 30:817, 1922.
2 Faber, K.: Acta Rad., 10:210, 1923.
3 Huck, G.: Bull. J. H. Hosp., 34:335, 1923.
4 Sydenstricker, V. P.: Southern M. J., 17:177, 1924.
5 Sydenstricker, V. P., Muhlerin, W. A., and Houseal, R. W.: Am. J. Dis. Child., 26:132, 1923.
6 Gallupe, H. Q., and O'Hara, D.: Bost. M. and S. J., 190: 161, 1924.
7 Hirsch: Arch. f. exp. Path. u. Pharmakol., 98:106, 1923.
8 Piney, A.: Brit. J. Surg., 11:707, 1924.
9 Hanhart, E.: Schw. M. Wchschr., 54:619, 1923.
10 Meulengracht, E.: Acta Med. Scand., 58:594, 1923.
11 Fischler and Paul, T.: Zeit. f. Klin. Med., 99:447, 1924.
12 Minot, G. R., and Sampson, J. J.: Bost. M. and S. J., 189. 629, 1923.
13 Stengel, A.: Atlantic M. and S. J., 27:779, 1924.
14 Leake, C. D.: J. Pharm. and Exp. Therap., 22:401, 1924.
15 Rosenthal, N., and Baer, G.: Arch. Int. Med., 33:535, 1924.
16 Giffin, H. G., and Haines, S. F.: J. A. M. A., 81:532, 1923.
17 Mills, A. C.: Cincinnati Med. J., 4:1924.

### HEMOLYTIC JAUNDICE

Hattesen[1] reports hereditary hemolytic jaundice in a father and seven children. Splenectomy which produces definite clinical improvement does not prevent hereditary transmission. Krumbhaar[2] in a large series of cases affirms the therapeutic value of splenectomy in hemolytic jaundice and splenic anemia, but does not find it of distinct value in other types of anemia. Vogel[3] reports similar results. Hemoglobinuria may be a prominent feature[4].

### BIBLIOGRAPHY

#### HEMOLYTIC JAUNDICE

1 Hattesen, H.: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 37:293, 1924.
2 Krumbhaar, E. B.: Am. J. Med. Sci., 166:329, 1923.
3 Vogel, R.: Deutsch Ztschr. f. Chir., 180:37, 1923.
4 Giffin, H. Z.: Arch. Int. Med., 31:573, 1923.

### HEMOPHILIA

Among the newer therapeutic measures in the treatment of hemophilia is the use of Roentgen-ray irradiation of the spleen. Neuffer[1] reports good results and describes the technique.

The method awaits confirmation. Feissly[2] discusses the pathology and recommends small blood transfusions. Rosenbloom[3] reports a death after the use of arsphenamine in hemophilia. The decrease in the coagulability of the blood after arsphenamine has been pointed out experimentally by several authors[4], [5].

BIBLIOGRAPHY

HEMOPHILIA

1 Neuffer: Minerva Med., 1:36, 1921-22.
2 Feissley, R.: Schw. Med. Wchnschr., 3:81, 1924.
3 Rosenbloom, J.: J. Lab. and Clin. Med., 9:57, 1923.
4 Oliver, J., and Douglas, E.: Arch. Derm. and Syph., 7:573, 1923.
5 Anwyl-Davies, T., and Mallanby, J.: Lancet, 2:555, 1923.

## PURPURA HEMORRHAGICA (THROMBOPENIC PURPURA), LEUKEMIA AND ERYTHEMIA

BY GEORGE R. MINOT

### PURPURA HEMORRHAGICA (THROMBOPENIC OR THROMBOCYTOPENIC PURPURA)

The terms purpura hemorrhagica and pseudohemophilia to indicate that form of purpura associated with marked diminution of the blood platelets have for a long time played a part in not permitting the condition to be sharply distinguished from other hemorrhagic states. In recent years there has been an increased usage of the terms "essential thrombopenia or thrombocytopenia" and "idiopathic thrombopenia or thrombocytopenic purpura," to designate the morbid condition known as idiopathic purpura hemorrhagica, first described by Werlhof in 1775. These newer terms seem desirable.

Splenectomy for chronic idiopathic thrombopenic purpura, with its beneficial results, is the most striking advance in the therapy of diseases of the blood in the past few years. The first case was reported by Kaznelson[1] in 1916, and a report by him on a series of cases was made in 1919[2]. It is only within the last 18 months that numerous other case reports[3], [4], [5], [6], [7], [8], [9], [10], [11] *and others* have appeared. The papers by Brill & Rosenthal[5] are worthy of special attention. There are now about 40 reported cases. The results indicate that splenectomy causes at least a tremendous symptomatic benefit even in what appear as very grave cases, and may produce a permanent cure. A number of patients have remained well over five years after operation. The operative mortality is about 5 per cent. The immediate effects are to cause cessation of bleeding, a rapid increase in the numbers of blood platelets, at times to above normal, the blood clot to become retractile, and the bleeding time normal. Later in from weeks to months the blood platelets usually decrease to well below normal and yet bleeding does not recur—perhaps because a desirable change has been produced in the function of the capillary walls. Anemia rapidly diminishes after operation. The actual size of the spleen does not appear to influence the results, though perhaps cases with an enlarged spleen have done better than those in whom the the spleen was not palpable. Engel's[7] experience indicates that splenectomy is probably of much less benefit in acute cases. Of course it is not to be considered in patients with symptomatic thrombopenic purpura.

Several reports, among others those of Seeliger[12] and Jedlicka[13], on the condition of the megacaryocytes in the marrow of fatal cases of idiopathic thrombopenic purpura, suggest that they are histologically abnormal; but one is impressed by the absence of control examinations. It is to be recalled that the histology of these parent cells of the platelets becomes soon altered after death, and that they are readily changed in appearance by slight differences in fixation and staining. Bedson[14] and others have reported upon the thrombocytolytic action of the spleen.

BIBLIOGRAPHY

PURPURA HEMORRHAGICA

1 Kaznelson: Wien. klin. Wchnschr., 29:1451, 1916.
2 Kaznelson: Ztschr. f. klin. Med., 87:133, 1919.
3 Bass, M. H., and Cohen, P.: Am. J. Dis. Child., 27:332, 1924.
4 Bowen, B. D.: Bull. Buffalo Gen. Hosp., 1:1, 1923.
5 Brill, N. E., and Rosenthal, N.: Am. J. Med. Sci., 166:503, 1923, and Arch. Int. Med., 32:939, 1924.
6 Cohn, I., and Lemann, I. I.: Surg., Gyn. and Obst., 38:596, 1924.
7 Engel, D.: Archiv. f. klin. Chir., 129:563, 1924.
8 Hitzrot, J. M.: Ann. Surg., 78:185, 1923.
9 Ricaldoni, A., and Albo, M.: Bull. et Mem. Soc. med. d. Hop. de Paris, 48:493, 1924.
10 Wild, E.: Mitteilung a. d. Grenzgeb. d. Med. U. Chir., 37:201, 1923.
11 Vogel, R.: Deutsch. Ztschr. f. Chir., 180:37, 1923.
12 Seelinger, S.: Klin. Wchnschr., 3:731, 1924.
13 Jedlicka, U.: Cas. Lek. Ces., 62:1108 and 1133, 1923.
14 Bedson, S. P.: The Lancet, 2:229, 1924.

### LEUKEMIA

Irradiation with Roentgen-rays or radium remains the best treatment for chronic leukemia. Thorium X[1] given intravenously has recently been equally effective. It is recognized that many patients who are in an apparently distressing condition can be returned to a useful and functionally efficient existence for varying periods of time, and case reports to emphasize this are numerous. Better results, due to more adequate irradiation methods, are being obtained today than a few years ago, and it is reasonable to anticipate that those under treatment will, on the average, do better than those treated formerly—now dead. Enough time has now passed since the inauguration of this form of treatment for leukemia so that the end results of a series of cases can be evaluated. Minot, Buckman and Isaacs have reported such, with control observations, for 78 cases of chronic myelogenous[2] and 50 of chronic lymphatic leukemia[3]. They show that irradiation has but little effect on prolonging the life of these patients. Cases of chronic myelogenous leukemia live on the average a little over

three years, and those of chronic lymphatic leukemia a somewhat shorter time. In spite of this, symptomatic improvement can be produced in 95 percent of patients with chronic myelogenous leukemia, and at least 50 percent become temporarily symptomatically well. The duration of efficient life is on the average 30 percent longer in irradiated than in non-irradiated cases. The actual duration of efficient life after irradiation is proportional to the duration of the disease. The results in chronic lymphatic leukemia are not so brilliant. Treatment of chronic leukemia should be guided and prognosis formulated from correlated information obtained from the patient's history and physical signs together with complete blood examination and basal metabolic rate determinations[2], [3], [4], [5], [5a]. Sternberg and Goenczy[6] believe that the reaction of the white cells to diathermy (high frequency alternating current) may prove serviceable in determining the therapeutic indications for irradiation therapy. Irradiation is undoubtedly of very definite value to patients with leukemia and maintains their efficiency much better than if not given. However, as leukemia progresses the patient's comfort decreases and irradiation becomes less and less effective.

The length of time between the appearance of symptoms and diagnosis was on the average 1.4 years for 148 cases of chronic myelogenous and also for 90 cases of chronic lymphatic leukemia studied by Minot et al.[2], [3]. However, there is as yet no undoubted evidence that the early institution of treatment effects life extension, though it does increase the time of efficient life.

Though elevation of the basal metabolism is frequent in leukemia there are few reports other than by McAlpin and Sanger[4] concerning this. Minot and Means[7] show that the metabolism-pulse ratio in exophthalmic goitre and chronic leukemia is the same. Lennox and Means[8] report that the leucocyte count and nitrogen balance were in a general way reciprocal in a case of acute leukemia and reëmphasize what was formerly shown by Gunderson, that the basal metabolism is a more accurate indication of the severity of the disease than the white cell count *per se*.

The occurrence in chronic lymphatic leukemia of universal involvement of the skin, showing a profuse scaling and reddening, is reported upon by Ketron and Gay[9]. Akijoshi[10] records a similar case with skin coloration resembling Addison's disease, though the adrenal glands were proved not to be involved in the leukemic process. These contributions add to the extensive monographs on the subject that appeared by Martinotti[11] in 1921 and 1922.

Deussing[12] reports a case of chronic myelogenous leukemia in a man of 78 in whom the first symptom was swelling of the left eye due to thrombosis of the palpebral and conjunctival veins.

Piney[13] writes on plasma cell leukemia. He presents with colored plates evidence to show that a form of atypical lymphadenosis exists, in which the cytological characters of the lesions establish the existence of a lymphoblastic and lymphocytic origin of the plasma cell.

Downey's[14] paper on the occurrence and significance of the myeloblast under normal and pathologic conditions indicates that this cell corresponds to the primitive blood cell of the embryo and in the normal adult is retained only in the marrow. Evidence is given to show that in leukemia it may revert to its primitive relations with the fixed tissues, with the lymphocyte and myeloid cells. His associate Logefeil[15] reports on mixed leukemia. He presents evidence of local development of myelocytes from lymphocytes in tissues and that simultaneous hyperplasia of lymphoid and myeloid tissue can occur close together. The peripheral blood of his patient also showed cells indicative of activity of both myeloid and lymphoid systems.

Case reports of *acute leukemia* have appeared with unusual frequency (the reviewer has at hand some 40 references) in the past two years. None give any really new information, though interesting aspects are often presented. For example Reymann[16] records a case in which there was tremendous leukemic infiltration of many organs, especially the kidneys which were seven times the weight of normal kidneys.

Gautier and Thevenod[17] review acute leukemia in infants and Baar[18] describes aleukemic leukemia in children that so often bewilders the diagnostician. Wodtke[19] emphasizes what has been shown by many others that the Roentgen-ray treatment of acute leukemia may relieve symptoms produced by pressure of diseased organs but is often useless and may hasten death.

It is of the utmost importance not to mistake the fatal condition acute leukemia for *infectious mononucleosis* (glandular fever) from which spontaneous recovery is the rule. This latter condition is becoming recognized but gradually by the profession. It is described admirably by Longcope[20] and Tidy and Daniels[21]. They give references to previous literature. The histological differentiation of the abnormal cells that occur in the peripheral blood of these two conditions is clearly presented by Downey[22]. A colored plate accompanies his article.

## BIBLIOGRAPHY

### LEUKEMIA

1 Aubertin, C.: Bull. et Mem. Soc. Med. d. Hop. de Paris, 48:4, 1924; and, Chiray, H., and Benda, R.: 48:245, 1924.
2 Minot, G. R., Buckman, T. E., and Isaacs, R.: J. A. M. A., 82:1489, 1924.
3 Minot, G. R., and Isaacs, R.: Boston M. and S. J., 191:1, 1924.

4 McAlpin, K. R., and Sanger, B. J.: Am. J. Med. Sci., 167: 29, 1924.
5 Brandt, T.: Norsk. Mag. f. Laeg., 84:761, 1923.
5a Schreiner, B. F., and Mottick, W. L.: Am. J. Roentgen. and Radium Therap., 12:133, 1924.
6 Sternberg, F., and Goenczy, St. V.: Zeit. f. klin. Med., 100: 257, 1924.
7 Minot, G. R., and Means, J. H.: Arch. Int. Med., 33:576, 1924.
8 Lennox, W. G., and Means, J. H.: Arch. Int. Med., 32:705, 1923.
9 Ketron, L. W., and Gay, L. N.: Bull. J. H. Hosp., 34:404, 1923.
10 Akijoshi, T.: Arch. f. Derm. u. Syph., 146:398, 1924.
11 Martinotti, L.: Tumori, 8:63, 184, 307, 1921, and 8:448, 1922.
12 Deussing, R.: Deutsch Med. Wchschrift., 14:437, 1924.
13 Piney, A.: Folia Haematol., 30:173, 1924.
14 Downey, H.: Arch. Int. Med., 33:301, 1924.
15 Logefeil, R. C.: Arch. Int. Med., 33:659, 1924.
16 Reymann, T.: Medizin. Klinik, 18:604, 1924.
17 Gautier, P., and Thevenod: Nourrisson, 12:1, 1924.
18 Baar, H.: Jahrb. f. Kinderh., 104:1, 1924.
19 Wodtke, G.: Medizin. Klinik, 16:530, 1924.
20 Longcope, W. T.: Am. J. Med. Sci., 164:781, 1922.
21 Tidy, H. L.: The Lancet, 2:9, 1923.
22 Downey, H.: Arch. Int. Med., 32:82, 1923.

### ERYTHREMIA (POLYCYTHEMIA-VERA, VAQUEZ-OSLER DISEASE)

Futcher's[1] paper in a recent issue of this journal gives a very clear presentation of this disease, due to excessive erythroblastic activity of the bone marrow. This disorder is comparable to that of the white cell elements of the marrow known as chronic myelogenous leukemia as is discussed by Minot and Buckman[2] and since by Letulle and Yacoel[3]. The former record with a colored plate of the blood, cases of erythremia that after many years developed an anemia, a leukemic blood picture, and pathologic findings of leukemia. As in myelogenous leukemia the basal metabolism is often increased in erythremia[2]. Brown and Giffin[4] describe the marked distention and engorgement of the capillaries and the increase in blood volume in erythremia; and Thaysen[5] shows that daily counts of the venous blood often vary by 1.5 millions. Isaacs[6] discusses the pathologic physiology.

It is evident that familial erythremia is more common than heretofore supposed, as indicated by Curschmann[7], Owen[8], Signorelli[9], and the reviewer, among others. Not rarely members of the patient's family will be found polycythemic though without symptoms. Curschmann[7], who reviews the literature, records that indications of the disease may be present early in life but remain "latent" for years. Schisler[10] describes a typical case of erythremia with redness and soreness of the tongue, a feature that is common but often not noticed.

The Roentgen-ray treatment of erythremia offers one way of controlling the disease. In the past this treatment has not infrequently been recorded as affording no benefit, probably because of being given inadequately. The more recent reports[11, 12, 13, 14, 15, 16, 17] indicate that if large doses of short wave length therapy are given adequately, particularly over the long bones, that benefit is the rule. Treatment of the spleen alone is apt to have little effect on the polycythemia. The use of a drug like benzol that decreases blood formation combined with irradiation therapy has been effective in some cases. More recently phenylhydrazin[8], a drug that enhances blood destruction, has been used and has caused improvement in the patient's health. It has also been effective when combined with irradiation therapy. The treatment must be guided by frequent blood examinations to prevent too serious marrow depression and blood destruction. In judging the effects of therapy it is important to remember that spontaneous remissions and relapses occur in the disease, so that in periods of weeks or months a considerable change in the actual level of the red cells and hemoglobin may occur. This is presumably due to variations in the equilibrium between blood formation and blood destruction.

Among articles on *Symptomatic Polycythemia* that by Morse[18] is of interest. He reports four cases in which polycythemia was due to pulmonary fibrosis caused by coal dust inhalation or chronic infection of unknown origin. The cases thus resemble those due to primary disease of the pulmonary artery, known as Ayerza's disease.

#### BIBLIOGRAPHY

ERYTHREMIA

1 Futcher, T. B.: Bost. M. and S. J., 191:304, 1924.
2 Minot, G. R., and Buckman, T. E.: Am. J. Med. Sci., 166: 469, 1923.
3 Letuile, N., and Yacoel, J.: Arch. d. Mal. du Coeur, 17:65, 1924.
4 Brown, G. E., and Giffin, H. Z.: Am. J. Med. Sci., 166:489, 1923.
5 Thaysen, T. E. H.: Folia Haematol., 23:234, 1923.
6 Isaacs, R.: Arch. Int. Med., 31:289, 1923.
7 Curschmann, H.: Med. Klin., 19:133, 1923.
8 Owen, T.: Bull. J. H. Hosp., 35:258, 1924.
9 Signorelli, E.: Hematoligica, 4:437, 1923.
10 Schisler, E. J.: J. Missouri State M. A., 21:82, 1924.
11 Head, G. S.: J. A. M. A., 83:40, 1924.
12 Mosenthal, A.: Med. Klin., 19:1153, 1023.
13 Pendergrass, E. P., and Pancoast, H. K.: Am. J. Med. Sci., 163:797, 1922.
14 Rydgaard, F.: Acta Rad., 2:243, 1923.
15 Schutze, J.: Med. Klin., 19:458, 1923.
16 Steiger, M.: Schweiz. Med. Wchnschr., 53:376, 1923.
17 Stolkind, E. J.: Lancet, 1:1312, 1923.
18 Morse, P. F.: Arch. Int. Med., 33:459, 1924.

## THE BLOOD AND ITS DISORDERS IN INFANTS AND CHILDREN

BY THOMAS E. BUCKMAN

### GENERAL HISTOLOGICAL CONSIDERATIONS

The work of Williamson[1] on the hemoglobin content of the blood, and the more recent work of Mayers[2] on the red cell count at different ages have given standards of comparison for the study of these important factors.

Lippman[3] has made an exhaustive statistical investigation of the blood histology of seventy-one normal infants during the first five days of life. Estimations of the numbers of corpuscles and study of their morphology were made at very frequent intervals, thus permitting accurate delineation of the fluctuations in the levels of the various types of blood cells. Druker[4] has studied the relationship between the volumes percentage of red corpuscles and their hemoglobin content in a series of 85 healthy in-

fants from two weeks to two years of age. The blood of normal infants has a low color index which is lowest at about 9 months of age, close to the time when the cell volume, (volume index) also, is lowest. From tables which he has compiled it is possible to detect deviations from standard normal values.

Bakwin and Morris[6] have studied the level of the leucocytes in newly born infants suffering from dehydration fever. They find no increase of the physiological leucocytosis in this condition.

### ANEMIAS

Attention is called to the interesting classification of blood disease in childhood proposed by Ward[6]. The classification is essentially anatomical, the diseases for the most part being divided into three main groups: those involving all part of the hemopoietic system, those involving especially the formed elements, and those involving the plasma.

Donnally[7] presents a case of severe anemia in a newly born infant and states that only one similar case has been reported in the literature. No cause for the condition could be found. The infant recovered following two transfusions of blood. A case showing a somewhat similar blood picture, but in an infant three and one half months old, is reported by Stransky[8].

Cases of *aplastic anemia* in children are reported by Hermann[9] and by Spak[10]. Hummel[11] reports the occurrence of anemia in a boy of twelve whose blood picture was consistent with that usually seen in aplastic anemia, but the bone marrow at autopsy was definitely hyperplastic.

Hotz[12] reports the development of *pernicious anemia* in a girl of ten years of age and Wirscher[13] cites a case in a girl four and a half years of age.

Lucas and Hoobler[14] report a series of cases of *secondary anemia* in infants that developed acutely. The cases are grouped into four classes: (1), anemia due to blood loss, (2), those in which there occurred only a paucity of hemoglobin, (3), anemia of the myelophthisic type and (4), those with an increased degree of blood destruction. Comments on the usefulness of transfusion in secondary anemia in infants are made.

Considerable discussion has appeared concerning the *anemia* which develops in infants fed on *goat's milk*. Bludhorn[15] takes the stand that goat's milk contains no specific influence which causes the anemia, whereas De Rudder[16] believes that goat's milk contains a definite hemolytic agent. Brouwer[17] also holds that the anemia seen in infants fed on a goat's or cow's milk diet is due not only to the paucity of iron in milk but also to a substance that hinders normal blood formation. His observations lead him to believe that goat's milk differs in this respect only qualitatively from cow's milk.

An interesting report of the pigment and iron in the infant's diet is given by Hill[18].

Observations on *von Jaksch's anemia* are reported by Evans and Happ[19], by Ramsay[20] and by others[21], [22]. Very little that is new is contributed, but the general trend of opinion seems to be that von Jaksch's anemia is probably not a disease entity, but a syndrome most often seen in cases of rickets, in which there is also present the element of infection.

Reviews of the symptomatology, pathology and treatment of *Banti's disease* are given by Comby[23] and by Rodrigo[24].

De Stefano[25] reports thirteen cases of splenic anemia due to syphilis and six others in which both syphilis and tuberculosis were etiological factors. Weber[26] describes cases in which the liver was mainly affected with secondary enlargement of the spleen and anemia.

According to De Meuron[27] true *Banti's disease* is rare in children. He reports one case that came to autopsy and states that he has been able to find in the literature only forty cases of this disease which correspond exactly with Banti's original description.

### POLYCYTHEMIA AND LEUKEMIA

References concerning these conditions are given in the preceding section. Those noted below particularly concern children. Harbitz[28] presents two cases of myeloerythroblastosis with autopsy reports. The cases referred to were newly born infants who showed ascites and numerous islands of incompletely developed blood corpuscles. Cases of marked functional polycythemia due to congenital heart disease are reported by Stransky[8] and others.

No case of erythemia (true Osler-Vaquez disease) in infants or children is mentioned in the recent literature.

Cases of myelogenous chloroma are reported byRowe and Hirschbock[29], Foot and Jones[30] and Nasso[31]. In a series of thirty-seven cases of severe anemia in children reported by Morse[32] there was only one case of myelogenous leukemia; a fact which serves to illustrate the extreme rarity of this disease in early life.

Acute leukemia occurs especially in early life and chronic leukemia later in life. Cases particularly of the lymphatic type in infants and children are reported by Poynton, Thursfield and Patterson[33], Condat[34], Cohan[35] and others.

### COAGULATION MECHANISM AND HEMORRHAGIC DISEASE OF THE NEWLY BORN

Careful studies of the variations in the blood platelets in the newly born have been reported by Lippman[8]. He found an average of 213,000 per cu. mm. at birth followed by a decrease during the next eighteen hours and then a rise. No changes from normal were observed in

icterus neonatorum. Emmanuele[36] obtained substantially the same results and observed also that premature infants have a somewhat greater number of platelets than normal infants at birth. According to Emmanuele the coagulation time of premature infants' blood is shorter than that of normal infants at birth. The coagulation time lengthens slightly with each day of life up to about ten days.

There seems to be a growing tendency to rely upon prolongation of coagulation time or bleeding time as diagnostic criteria of hemorrhagic disease of the newly born. On this basis intercranial hemorrhage frequently might be ascribed to a disorder of the blood. It must be remembered, however, that the coagulation time and bleeding time may be slightly prolonged without appearance of symptoms. Thus, Greuter[37] found the coagulation time and bleeding time to be prolonged in thirteen of two hundred and fifty newly born infants on the third, fifth and ninth days of life of whom only two showed symptoms of hemorrhagic disease. Sherman and Lohnes[38] in studying a series of one hundred infants found twenty-eight in whom the bleeding time was longer than five minutes, and twelve in whom the coagulation time was longer than normal. In only one case did cerebral hemorrhage occur. Furthermore Greuter[37] found a prolonged coagulation time in 75% of fifty-three infants showing icterus neonatorum, yet but one of these developed hemorrhages.

Very little that is new concerning hemorrhagic disease of the newly born has been brought out in recent literature. Cases are reported by Cruikshank[39], Rodda[40], Vignes[41], Groves[42], Wing[43] and others.

### PURPURA

An excellent clinical review of ten cases of various types of purpura is given by Poynton[44]. Fulminating purpura in early life is reported by Koenig[45], McConnel and Weaver[46], Porter[47] and others. Schoenberger[48], Stansfield[49] and Dwyer[50] report cases of purpura with unusual blood and clinical findings. Cases of *Henoch's Purpura* are reported by Kilgour[51], Wilson[52] and Millard[53].

Gram[54] reports a case of primary non thrombopenic purpura apparently cured by repeated protein shock.

### TRANSFUSION

To the pediatrician, by far the most important contribution made in recent years in this field is the work of Siperstein and Sansby[55]. These investigators have shown that the red corpuscles of citrated blood introduced into the peritoneal cavity are absorbed practically quantatively into the general circulation and that this procedure can be carried out without harm. Sansby and Siperstein[56], Meyer[57], Opitz[58], Ruh[59] and others have shown the value of intraperitoneal transfusion in the treatment of anemia in infants.

Though the peritoneal route will permit the use of transfusion where its use might otherwise be extremely difficult or out of the question still another possible route for the introduction of blood has been recently described. Sidbury[60] used the umbilical vein for introducing blood into a four day old infant suffering from hemorrhagic disease of the newly born. Uneventful recovery followed.

Until recently transfusion has not been extensively used in infants and children except for the purpose of controlling bleeding or for the relief of very severe anemia. But the beneficial effects of blood are apparently not confined to supplying thromboplastic substances and oyygen carriers. Leebron[61] reports excellent results following the use of transfusion in malnutrition and infantile atrophy and more recently Marriott[62] and Hess[63] have advocated its use in the treatment of infants suffering from acute dehydration and toxemia.

Concerning the amount of blood to be introduced into infants and children important information is given by the report of Halbertsma[64]. According to this investigation 15 c.c. of blood per kilogram of body weight will cause a rise of the red cell count of about one million in infants and young children. Hence the usual maximum dosage for infants of 15 c.c. of blood per pound of body weight should permit an increase of somewhat over two millions of red cells per cubic millimeter of blood.

### SPLENECTOMY

Bartlett[65] points out that splenectomy is more often indicated in early life than is usually supposed. From his series of fifty-one children in whom splenectomy has been done, he concludes that hemolytic jaundice is the condition which is most constantly relieved by this procedure, but that patients with Gaucher's disease and splenic anemia also may be benefited by splenectomy. Vogel[66] and Carslaw[67] reach the same conclusions. The improvement following splenectomy in cases of chronic idiopathic thrombopenic purpura, a condition occurring in children and adults, is mentioned above.

The consensus of opinion seems to be that splenectomy in children is indicated under the following conditions: in hemolytic jaundice when the disease is sufficiently severe to cause symptoms; in Gaucher's disease; in splenic anemia especially when this is of Banti's type; and in suitable cases of idiopathic thrombopenic purpura. On the other hand in spite of the fact that the enlargement of the spleen may be marked and that improvement has been reported following its removal, splenectomy is generally held to be of doubtful value, or to be contraindicated, in the leukemias and Hodgkins' disease; in acute infections; in von Jaksch's anemia and polycythemia.

BIBLIOGRAPHY

THE BLOOD AND ITS DISORDERS IN INFANTS AND CHILDREN

1 Williamson, C. S.: Arch. Int. Med., 18:505, 1916.
2 Mayers, L. H.: Arch. Int. Med., 30:478, 1922.
3 Lippman, H. S.: Am. J. Dis. Child., 27:473, 1924.
4 Drucker, P.: Hospilstid, 66:110, 1923.
5 Bakwin, H., and Morris, R. M.: Am. J. Dis. Child., 26:23, 1923.
6 Ward, G.: Brit. J. Dis. Child., 20:84, 1923.
7 Donnally, H. H.: Am. J. Dis. Child., 27:369, 1924.
8 Stransky, E.: Ztschr. f. Kinderh., 35:195, 1923.
9 Hermann, C.: Am. J. Dis. Child., 23:484, 1922.
10 Spak, H.: Acta Pediatrica, 1:310, 1921.
11 Hummel, H.: Ztschr. f. Kinderh., 32:285, 1922.
12 Hotz, A.: Jahrb. f. Kinderh., 105:161, 1924.
13 Wirscher, D.: Schweizer Med. Wchnschr., 5:1104, 1923.
14 Lucas, W. P., and Hoobler, H. R.: Am. J. Dis. Child., 26:291, 1923.
15 Bludhorn, K.: Münch. Med. Wchnschr., 69:1220, 1922.
16 De Rudder, B.: Klin. Wchnschr., 3:876, 1924.
17 Brouwer, E.: Jahb. f. Kinderh., 103:51, 1923.
18 Hill, L. W.: Bost. M. and S. J., 191:342, 1924.
19 Evans, F. A., and Happ, W. M.: Bull. J. H. Hosp., 33:1, 1922.
20 Ramsay, G. W. St. G.: Brit. J. Dis. Child., 21:48, 1924.
21 Aubon, P.: Arch. de Med. des Enfants, 26:297, 1923.
22 Craig, J., and O'Sullivan, A. C.: Irish J. Med. Sci., 5:97, 1922.
23 Comby, J.: Arch. de Med. d'Enf., 26:39, 1923.
24 Rodrigo, D.: Arch. espan. de Pediat., 7:321, 1923.
25 De Stefano, S.: Pediatria, 30:385, 1922.
26 Weber, F. P.: Brit. J. Dis. Child., 20:78, 1920.
27 De Meuron, M.: Arch. de Med. d'Enf., 26:416, 1923.
28 Harbitz, F.: Norsk. Mag. f. Laegevidenskaben, 84:211, 1923.
29 Rowe, O. W., and Hirschboek, F. J.: Am. J. Dis. Child, 24:239, 1923.
30 Foot, N. C., and Jones, G.: Am. J. Dis. Child., 25:379, 1923.
31 Nasso, I.: Pediatria, 31:489, 1923.
32 Morse, J. L.: Bost. M. and S. J., 186:657, 1922.
33 Poynton, F. J., Thursfield, H., and Patterson, D.: Brit. J. Dis. Child., 19:128, 1923.
34 Condat, G.: Arch. de Med. d'Enf., 26:286, 1923.
35 Cohan, W.: Semaine Med., 2:580, 1923.
36 Emmanuele, A.: Pediatria, 31:422, 1923.
37 Greuter, W.: Ztschr. f. Kinderh., 35:210, 1923.
38 Sherman, DeW. H., and Lohnes, H. R.: N. Y. State J. Med., 23:146, 1923.
39 Cruikshank, J. N.: Lancet, 1:836, 1923.
40 Rodda, F. C.: J. Iowa Med. Soc., 13:511, 1923.
41 Vignes, H.: Medécine, 4:538, 1923.
42 Groves, W. R.: Med. J. Australia, 2:762, 1922.
43 Wing, L. A.: Am. J. Obs. and Gyn., 6:85, 1923.
44 Poynton, F. J., Thursfield, H., and Patterson, D.: Brit. J. Dis. Child., 19:5, 1923.
45 Koenig: Ztschr. f. Kinderh., 32:282, 1922.
46 McConnell, G., and Weaver, H. L.: J. A. M. A., 78:165, 1923.
47 Porter, P. E.: Archivos Latino-Americanos de Pediatria, 16:562, 1922.
48 Schoenberger, M.: Arch. f. Kinderhlk., 73:157, 1923.
49 Stansfield, O. H.: Bost. M. and S. J., 187:739, 1923.
50 Dwyer, H. L.: J. A. M. A., 78:1187, 1922.
51 Kilgour, D.: Canad. M. and S. J., 14:302, 1924.
52 Wilson, S.: J. Mich. State Med. Soc., 21:136, 1921.
53 Millard, R. J.: Med. J. Australia, 2:446, 1922.
54 Gram, H. C.: Ztschr. f. klin. Med., 95:51, 1922.
55 Siperstein, D. M., and Sansby, J. M.: Am. J. Dis. Child., 25:202, 1923.
56 Siperstein, D. M., and Sansby, J. M.: J. A. M. A., 80:1763, 1923.
57 Meyer, L. F.: Jahrb. f. Kinderh., 105:188, 1924.
58 Opitz, H.: Klin. Wchnschr., 3:784, 1924.
59 Ruh, H. O., and McClelland, J. E.: Ohio State M. J., 19:780, 1923.
60 Sidbury, J. D.: Southern M. J., 16:676, 1923.
61 Leebron, J. D.: N. Y. M. J., 117:298, 1923.
62 Marriott, W. McK.: J. A. M. A., 83:600, 1924.
63 Hess, J. H.: J. A. M. A., 83:602, 1924.
64 Halbertsma, T.: Am. J. Dis. Child., 24:269, 1922.
65 Bartlett, F. H.: Am. J. Dis. Child., 23:283, 1922.
66 Vogel, R.: Deutsch. Ztschr. f. Chir., 180:37, 1923.
67 Carslaw, J.: Brit. M. J., 2:1204, 1922.

## BOOK REVIEWS

*The Arab at Home.* By PAUL W. HARRISON, M.D. Published by Thomas Y. Crowell Company, New York. 345 pages.

It is quite fitting that Dr. Harrison's book on the Arab should be reviewed in the BOSTON MEDICAL AND SURGICAL JOURNAL. In the first place, the book presents the problems of Arabia as viewed by a man of medical training; in the second place, those readers of the JOURNAL who knew the author when he was an interne at the Massachusetts General Hospital will be glad to know of this record of his life and work in Arabia. In one sense the book does not constitute such a record, for only in one chapter does Dr. Harrison speak in any detail of his medical career in the Near East. In a larger sense this volume is an unconscious testimonial to the writer's diligence as a student of Arabian history, to his keen observation, to his indefatigable acquisition of facts pertaining to the life and character of the people among whom he works, and to the breadth of vision and sympathy with which he views their problems.

"The Arab at Home," as its title suggests, is a description of the Arab's character, of his methods of living, his government, his history and his religion. The story is fascinating, the style of its telling excellent. Throughout the book there is woven a delicate thread of humor which is delightful.

Dr. Harrison has apparently written "The Arab at Home" about a definite idea. His thesis is that the Arab is an intense individualist and yet an internationalist; he is a true believer in the equality of man. Yet in spite of his many wonderful qualities Arabia has been in a state of stagnation for over a thousand years. Dr. Harrison says: "The world needs the Arab. Perhaps no race has a richer contribution to bring than he. It is not simply for the Arab's own sake, but to make that splendid contribution available for the world, that men work for the redemption of Arabia. The eventual success of their efforts will be a contribution to the world outside almost as great as to the Arabs themselves."

For the redemption of Arabia an external stimulus is needed. This must not come in the form of a veneer of Western civilization, but must be achieved by grafting the Christian ideal, especially as it bears upon family life and education, upon the sturdy trunk of Arab character.

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*Fundamentals of Human Physiology.* By R. G. PEARCE and J. J. R. MACLEOD. Third edition. 341 pp. C. V. Mosby Company.

Though modest in size, this volume covers briefly and well the entire field of physiology. While essentially for elementary study or review purposes, it is not a mere résumé or compilation of the standard text-books, but gives much evidence of originality. The chapter on the physico-chemical basis of life is particularly well written.

In the section on dietetics the discussion of protein requirement and the tables of caloric values of foods are well worth attention. The consideration of the physiology and hygiene of the mouth is more complete and interesting than is usual in books of this type.

The notes on hygiene and public health contained in the appendix are rather sketchy and do not add much to the value of the book. Occasional typographical errors also detract from the general good impression.

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*Aids to Surgery.* By JOSEPH CUNNING, M.B., B.S., F.R.C.S., Eng., and CECIL A. JOLL, M.S. Lond., F.R.C.S., Eng. Fifth edition. New York: William Wood & Co. 1924.

The popularity of this little book, which has been revised by Cecil A. Joll, is evidenced by the fact that it has had a total of seventeen reprintings, including new editions, since its first appearance in 1904.

This book is chiefly remarkable in that it succeeds in covering the entire field of surgery in 429 small pages. It is as thorough as its brief space allows, for its brevity is its principal limitation. For the most part the subject matter is that which is generally accepted by conservative surgeons, but many recent developments are not included. It could not be used as either a text or a reference book, for its conciseness precludes any sufficiently thorough discussion of any phase of the subject. Such an attempt to epitomize surgery limits its use to that of review for examinations. For this purpose it should prove satisfactory.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

## CASE 11011

### MEDICAL DEPARTMENT

A Canadian janitor of seventy-two entered October 15. The chief complaint was diarrhea.

F. H. His father died of softening of the brain.

*Habits.* He took a pint of alcohol a week until the last four months, when he had taken almost none. He used Tanlac, Scott's emulsion and Fellows' compound syrup of hypophosphites.

P. H. He had had measles, chickenpox, diphtheria, and two attacks of pneumonia. At eighteen he had tuberculosis with night sweats. He did not remember hemoptysis. From the age of thirty-two to forty-two he had hemorrhoids with anal fistula. For thirty years he had had sharp pains in the left side without known relation, lasting all day and most of the time, but with occasional exacerbations. At sixty he fractured ribs on the right side. For two years he had been chilly and recently he had had a real chill. For a year he had been dyspneic on climbing a flight of stairs. He had had slight cough for years with two ounces of sputum a day. He had some pain across the top if the day. He had occasional sore throat and hoarseness. He had some pain across the top of the chest with colds. Recently he had had some edema of the legs and hands, some dizziness on stooping, morning numbness of the fingers and toes, and some pain in the shoulder and hip on motion. Fourteen years ago he weighed 145 pounds, his best weight. His usual weight was 125, his present weight 103.

P. I. In February, eight months before admission, when feeling perfectly well, he was seized with an attack of vomiting and purging after drinking an ounce of alcohol. The acute attack passed the next day, but he soon afterward began to have diarrhea all the time with some incontinence of feces and urine. By September he was having six movements a day, two at night, and was almost continuously incontinent of feces. At admission the stools were gray and liquid, or mixed with hard disc-shaped masses the size of a chestnut. He felt costive at times but had no real constipation. In June he began to have some dull pressing pain in the penis, groins and suprapubic region while urinating, persisting all summer, with tenderness in the groins and suprapubic region which persisted until admission. The urinary stream was very small. He passed only half a cupful of urine at a time, eight times a day and four times at night during the summer, with urgency; since September only four times a day and twice at night. At present the stream was larger, the quantity greater, and the dysuria gone. From July to September his appetite was poor. It was now excellent. About August he began to have severe pain in the right subcostal region, radiating to the epigastrium and coming on while eating. If he stopped eating the pain was mild, but if he continued to eat after it came on it became severe and lasted about half an hour. Several times a week he would vomit when the pain became intense. The vomitus was the liquid part only of recently eaten food and never over a cupful. By care at meals he had very often recently avoided vomiting. There was persistent tenderness in the right subcostal region. Recently he noticed that the pain came on when he turned in bed. He had lately had occasional slight colic in the lower abdomen. He had lost twenty pounds in the past few months and felt weak.

Records of the Out-Patient Department September 10, a month before admission. Emaciated. Weight 103. Urine, sp. gr. 1.022, cloudy, the slightest possible trace of albumin, many red blood corpuscles. Pupils irregular. Scoliosis. Pyorrhea. Back dull below the scapulae. Bronchial breathing and increased voice sounds over the left back, diminished and absent breath sounds and absent tactile fremitus over the right back. Râles at both apices. Cardiac dullness not made out. Cardiac impulse made out behind. Mass and tenderness near umbilicus. X-ray showed the entire left chest dull. Heart and mediastinal contents were displaced to the left. Outline of the diaphragm on this side not made out. Esophagus tortuous, displaced far to the left and considerably dilated. Definite delay at the cardia. Fundus of the stomach small. Some regurgitation of food back into the esophagus. The walls however appeared flexible and there was no irregularity of gastric outline or peristalsis Pyloric sphincter and first portion of duodenum normal. Cecum and colon negative. The plate of the chest showed some coarse shadows resembling bubbles in the left upper chest and fine dense mottling at the right apex. Small dense areas, probably calcification, in the right lung.

P. E. Markedly emaciated. Skin wrinkled, showing evident loss of weight. A dark pigmented area about the anus. Skull showed irregular bumps with elevation of occipital bone at suture line. A few small shotty glands in the neck and axillae. Left chest sunken. Ribs

retracted. Chest did not expand well on inspiration. *Lung* signs as shown in diagram. *Heart.* Impossible to percuss borders or to hear any sounds in front. Sounds poor in quality, apparently regular, could be heard in the left axilla and under the left scapula. No definite murmurs. Abdomen rounded, tympanitic, somewhat distended; generalized tenderness on palpation. Irregular mass in the epigastrium, apparently fixed. It could not be well outlined because of distension. *Rectal examination.* Sphincter relaxed. Marked tenderness. The finger met resistance, an irregular nodular hard mass, about 5 cm. in. Prostate could not be distinguished from the mass. Apparently constriction of rectum; admitted only tip of finger. *Extremities.* Moderate pitting edema of ankles and feet. On inner surface of right leg brownish pigmented area with a number of small depressions.

*T.* 98°-102°. *P.* 60-120. *R.* 19-30. *Urine.* Amount not recorded, sp. gr. 1.016, no albumin or sugar. *Renal function* 20%. *Blood.* Hgb. 100%-80%, leucocytes 9,000, polynuclears 81%, reds and platelets normal. *Wassermann* negative. *Non-protein nitrogen* 30 mgm. *Sputum* purulent. Many bacteria. Pus all broken down. No tubercle bacilli. *X-ray.* Plates of the skull and pelvis not abnormal. Appearance in the chest practically the same as at previous examination. Right lung field large and bright except at the extreme apex, where there was definite dullness, somewhat mottled, with a fairly sharply defined lower margin. Heart and mediastinal contents displaced to the left so that the trachea and

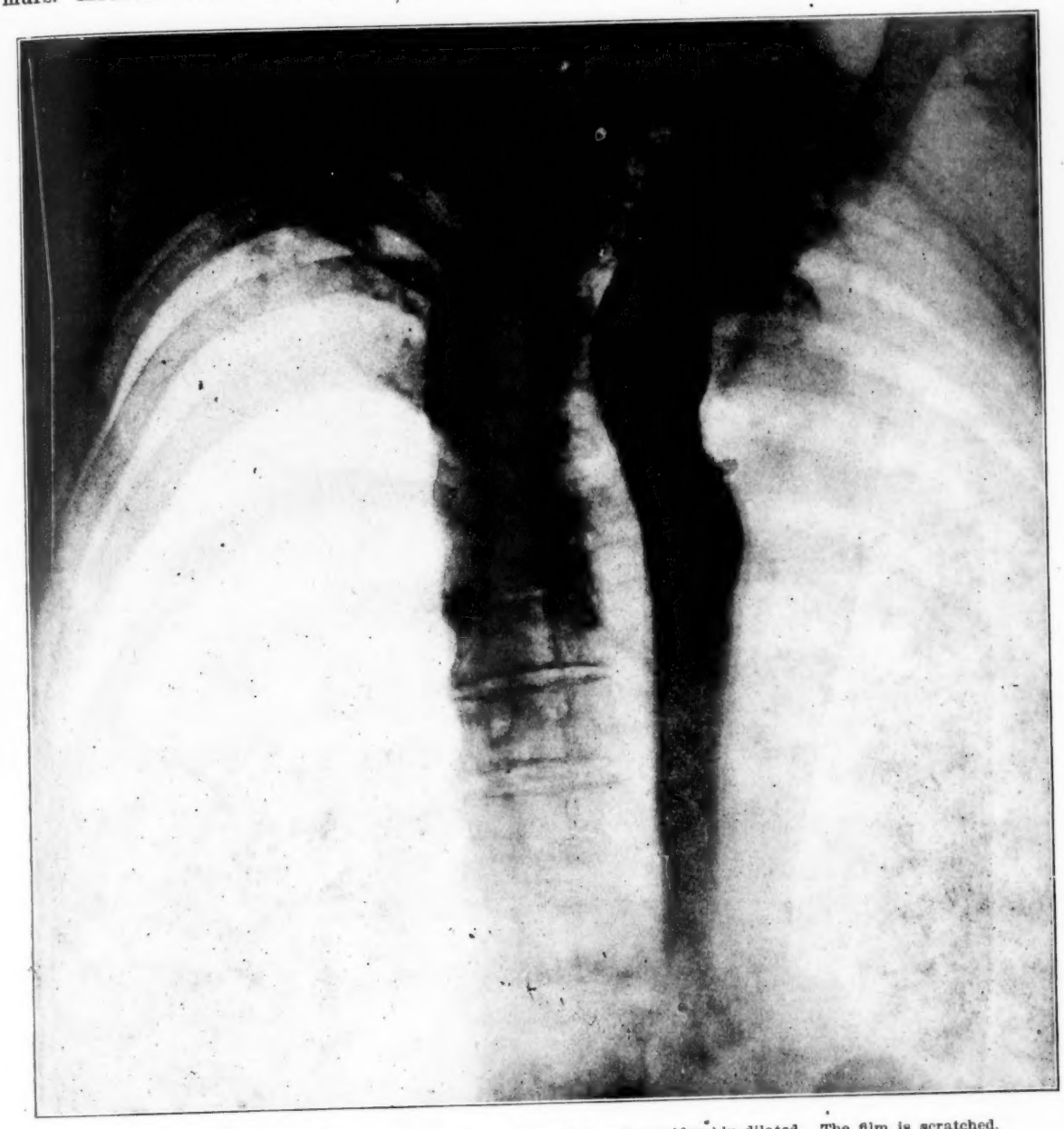


PLATE I. Esophagus tortuous, displaced far to the left and considerably dilated. The film is scratched.

esophagus lay to the left of the spine. Lower part of the left chest dull, obliterating the outline of the diaphragm. Dullness of even density throughout. Upper half of the midchest showed localized irregular shadows resembling bubbles.

*Consultation, Dr. R. B. Greenough.* "Operation under local anesthesia would be permissible, but I should not advise it. The patient has

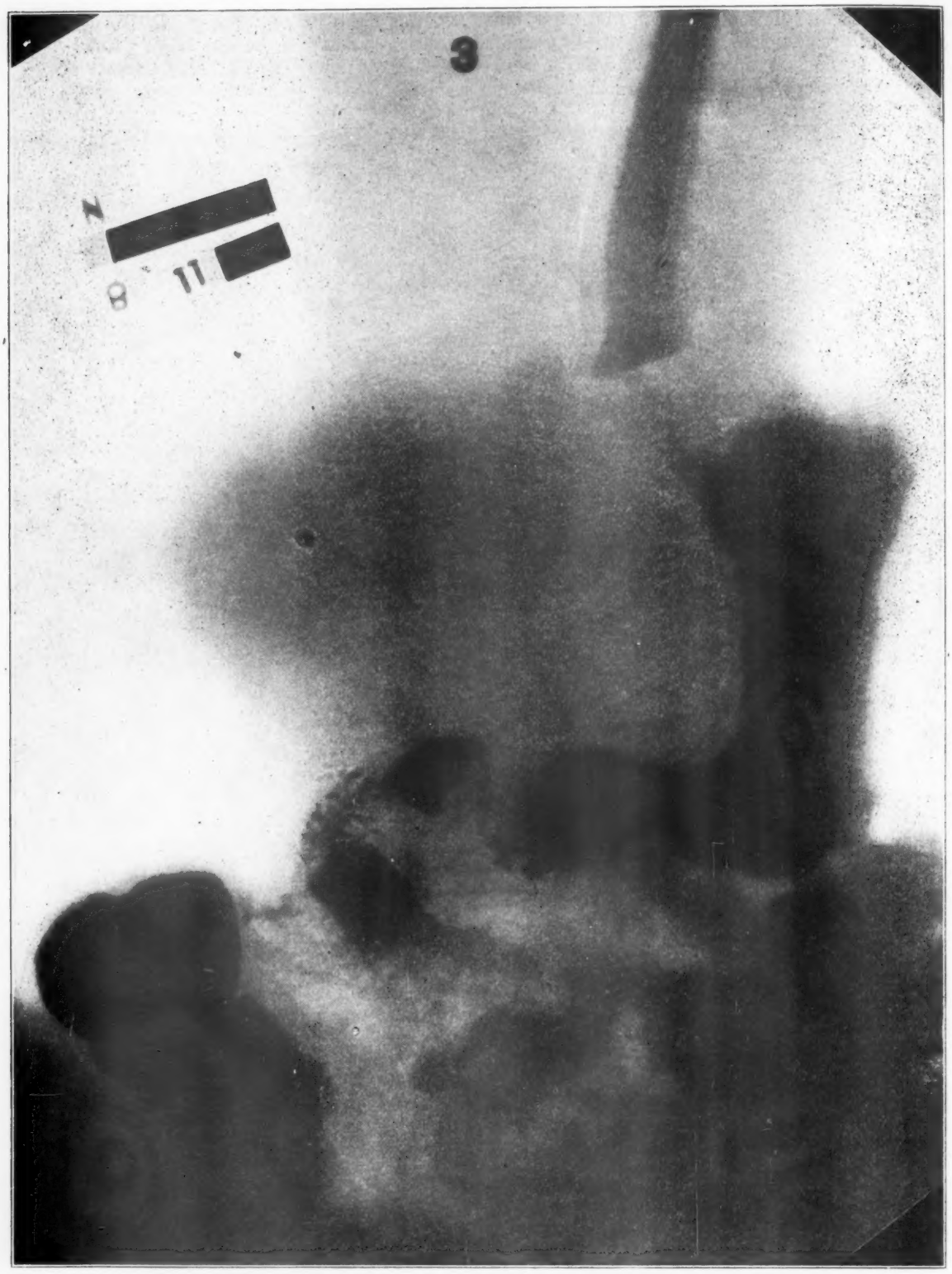
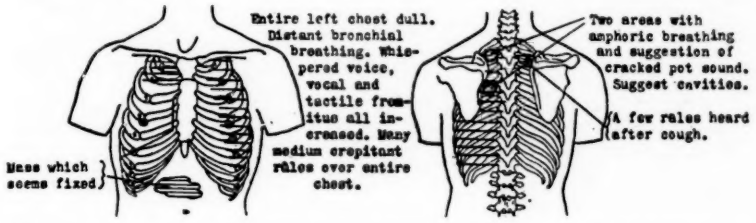



PLATE II. Esophagus tortuous, displaced far to the left and considerably dilated. Definite delay at the cardia. Fundus of the stomach small. Some regurgitation of food back into the esophagus. The walls however appeared flexible, and there is no irregularity of gastric outline or peristalsis. Pyloric sphincter and first portion of duodenum normal. The film is defaced.

not long to live and has little pain at present." *Report of Genito-Urinary consultant.* "There is a nodular bleeding mass in the anterior wall of the rectum extending down to the external sphincter and up over the prostate region. It is not usual for a prostatic tumor to break through the rectal wall and bleed or to extend along the rectal mucosa. I think this is primarily a rectal tumor, although the prostate may be involved by continuity."


Entire left chest dull. Distant bronchial breathing. Whispered voice, vocal and tactile fremitus all increased. Many medium crepitant râles over entire chest.
Mass which seems fixed
Two areas with amphoric breathing and suggestion of cracked pot sound. Suggest cavities.
A few rales heard after cough.

The patient failed rapidly though painlessly. His lungs filled up with moisture. October 18 he died.

## Discussion

### by dr. richard c. cabot

### notes on the history

1. In a man over seventy we know the probabilities are few,—arteriosclerosis, malignant disease, terminal infection, prostate and its complications. The vast majority of all deaths over seventy fall under one of these four things, so that before you know anything about a case these are in your mind.

2. "Pain in the left side." They very often make this mistake in records. We do not know whether it is the left side of the chest or of the abdomen. I suppose we shall find out later.

3. "Pain across the top of the chest with colds." That makes us think that his pain in the left side was also in the chest. It probably was. We suspect that he has had tuberculosis, and we wonder whether this pain in the left side was pleurisy.

The complaints are those of any person of his age. His loss of weight and his history indicate something that was believed to be phthisis. The chilliness suggests a present infection. I do not see how tuberculosis can be ruled out, even though he is old for it.

### notes on the physical examination

"Incontinence of feces and urine." This apparently lasted from February to September, a chronic diarrhea.

He has had no gross hematuria, only this microscopical hematuria.

"Râles at both apices." Of course that is a very important finding if it is confirmed. Râles at both apices means very few things in the history of medicine.

The only cardiac impulse that was found is in the back, an extraordinary thing, perfectly possible but rare.

Dr. Holmes: In the plate described (Plate I) the band of diminished density which you see running down here to the left of the spine represents the bismuth-filled esophagus. You notice that it is rather wide at the upper portion and narrows out at the lower portion. This is nearly the normal appearance of the esophagus when it is filled with barium. The esophagus was not at any place much wider than you see it, which is only a slight amount more than normal. Plate III shows the condition in the chest better. Here you have a rather brilliant right lung. In the extreme apex there is a dull area with a ragged outline and a few dense markings running up to it, probably an old tuberculosis. Though any destructive process at the apex could produce such a picture, its location at the right apex would make you think it is tuberculosis. There is none of the heart shadow visible to the right, and this shadow which you see through here, while it comes in the same region in which we see the esophagus in the other plate, might not be the esophagus. If he had swallowed air and the esophagus was filled with air at the time this plate was taken the appearance might represent air in the esophagus. On the other hand it might be the right lung displaced over beyond the middle of the chest, and this shadow would represent the mediastinal contents and this the heart shadow. The heart would just about correspond to this area of dullness in the lower part of the left chest. In the upper half of the left chest you see a mottled area resembling bubbles. This appearance is seen in the multiple small cavities of bronchiectasis. A simple collapsed and fibrosed lung without air in it would not give you such a picture. You have to have air. We interpreted from this plate some process which had destroyed or collapsed the lung on this side, so that there was practically no lung present and the mediastinal contents had gone over to that side. The whole thing might be tuberculosis with the lung very much fibrosed and contracted. There is very definite scoliosis, and from that we think that this was a longstanding condition in the chest and had nothing to do with this recent illness.

In the plates taken of the stomach and esophagus (see Plate II) notice the lower end of the esophagus coming down, and a distinct break between it and the cardiac end of the stomach

with the narrow trickle of barium running through the esophagus to the stomach. Ordinarily with such a condition as that we should suspect malignant disease,—the narrowing of the esophagus, the fact that the barium contents regurgitated, showing that the cardia remains

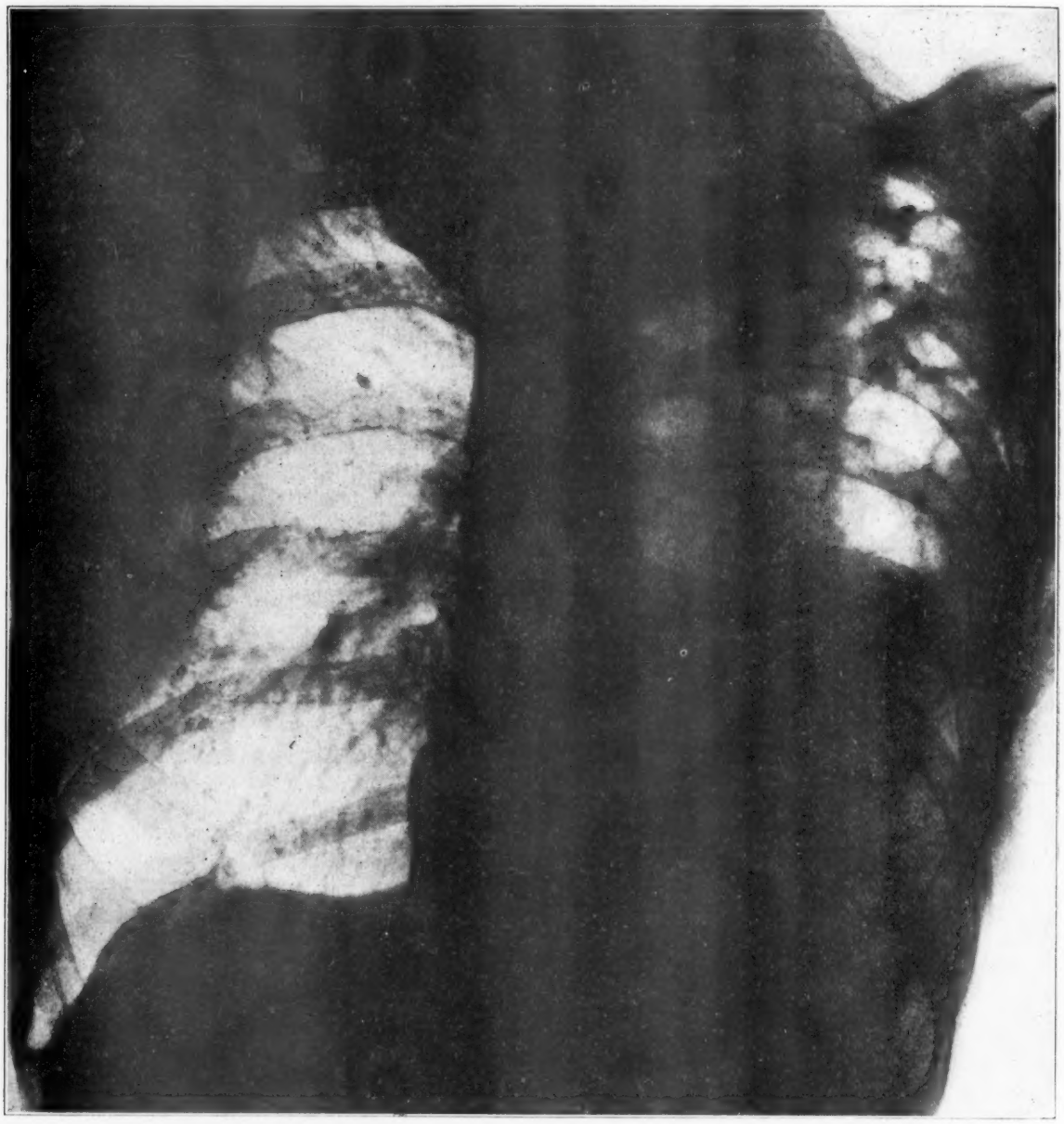


PLATE III. Shows some coarse shadows resembling bubbles in the left upper chest and fine dense mottling at the right apex. Small dense areas, probably calcification, in the right lung.

open and the walls are stiffened. These findings go with a malignant process, whereas cardiospasm and the non-malignant things are apt to have a much larger amount of dilatation and never show regurgitation into the esophagus from the stomach. The esophagus is displaced and very much distorted, and on the basis of trying to make one disease account for the whole thing we think that the malposition of the stomach might account for the appearance of the esophagus. In the stomach itself there is a definite decrease in the size of the fundus as we see it on the plate and screen. The lower half of the stomach is normal. The stomach emptied on time. There was no break in the peristaltic wave. Peristalsis normally does not go much beyond the point where I have my finger. The upper part of the stomach does not show peristaltic movements, and we try to find out whether that part is flexible or not by pressing on the barium here and by having the patient take a deep breath. When he does the diaphragm pushes the stomach down and its contour changes. This man's diaphragm is high and fixed on that side, and we were unable to get any data as to whether it was flexible or not,

and again I interpreted it as probably being due to the condition in his lung.

DR. CABOT: Those are the findings of tuberculosis. It ought not be anything else. So far I haven't any idea what else it is. The position of the heart corresponds with what we have been told before; the only palpable impulse was felt in the back, and as there is scoliosis and disease of the left chest we can perfectly well imagine that this represents the truth, the heart being displaced to the left and backwards.

There is not enough, I should say, to justify us in any suspicions about syphilis.

In the kidneys we have nothing to accuse.

I suppose they are going to operate on this abdominal mass to see what it is. I do not see any indication for any operation on his chest.

That is a very sensible consultation I should say; do not bother him or put him to any more trouble than he had.

### DIFFERENTIAL DIAGNOSIS

Except the scoliosis, which I do not suppose we ought to pay any attention to, the three important things are the chest, the abdominal mass, and the rectum. We have these three facts, and the first thing to do is to see if we can think of anything that would explain them all. The rectal lesion cannot be tuberculosis so far as I know. I never heard of tuberculosis doing anything like that. I believe it is malignant,—he has a cancer of the rectum. What is the mass in the epigastrium? If he had lived longer and been in better shape I think we should have known more. It might be a fecal mass so far as I know.

DR. HOLMES: The examination of the colon and small bowel was practically negative.

DR. CABOT: Masses connected with stomach are ordinarily not fixed. It is conceivable that this mass is connected with the stomach. But it is not in the position where it could be connected with the cardiac end of the stomach; it is too low; and the X-ray seems to exclude its being connected with the pyloric end. So on the whole I think this tumor is not connected with the stomach unless on the cardiac end, which I do not think.

I think he has pulmonary tuberculosis. I do not see how you could make that X-ray picture go with malignant disease. If it is it's the first time I've seen it. If you think it is bronchiectasis I should have to say that I never knew bronchiectasis to make such a picture as that, and I have known tuberculosis to make such a picture.

As to the possibility of pulmonary syphilis, when Dr. Holmes showed that first picture I remembered some pictures he used to show when Dr. Abner Post was here. He had a collection of plates representing lesions which Dr. Post thought were due to syphilis, and we had no other diagnosis to propose. I take it we know very little about syphilis of the lung today. I certainly know very little. There certainly is evidence pointing to disease at the top in the X-ray. The crackles on two separate occasions in the Out-Patient Department and in the wards were heard in the left apex as well as the right. That is not like anything that I know about syphilis, which is not saying a great deal. On the whole I am going to rule out syphilis because I know so little about it, and particularly because we have evidence of a bilateral lesion. I think he has tuberculosis of the lung, cancer of the rectum, and what he has in his middle I do not know. What could he have there? It might perfectly well be in the omentum. Fixation is not usual in omental tumors, but then this man's diaphragm is not at all a usual diaphragm, and the fixation of any abdominal tumor depends largely on the diaphragm. I think this lower mass is in the rectum. Cancer of the rectum extending into the omentum, tuberculosis of both lungs, extensive in the left lung, with the heart pushed into the back by the adhesions of the left lung, with some tuberculosis of the right apex also. I do not see any reason to accuse the heart of any disease. The kidneys are all right, and the gastro-intestinal tract, aside from the rectum, and the nervous system is all right. That is as far as I can go.

A STUDENT: How about carcinoma of the pancreas?

DR. CABOT: Cancer of the pancreas usually causes jaundice. He has not had that. It causes a deep tumor; this seems to be a superficial tumor.

A STUDENT: What is the percentage of metastases from the prostate?

DR. CABOT: I cannot say. It goes to a great many places.

A STUDENT: Would the metastases show in the skull?

DR. HOLMES: I looked up the skull plate afterwards and it is perfectly normal. Metastasis from the prostate is first to the bones of the pelvis and later may involve the bones of the skull.

A STUDENT: Could that mass be connected with the liver?

DR. CABOT: I do not see that I could exclude it. But ordinarily with that you do not feel a single mass, you feel a good many, and the whole liver is obviously enlarged. This seems to be pretty localized.

A STUDENT: What of the pelvic symptoms?

DR. CABOT: I think those are due to the irritation of the bladder. He has rectal carcinoma, but I do not believe it has gone through into the bladder, although it would irritate it.

A STUDENT: Would metastasis to the omentum give such an amount of vomiting?

DR. CABOT: No, it would not. I do not see anything that would account for that except the presence of an active tuberculosis. Dr. Holmes showed us an area there in the esophagus which may have some connection with the vomiting.

A STUDENT: Is it not possible that he had two primary tumors?

DR. CABOT: I never heard of that. I supposed that the word primary meant that it started in one place.

A STUDENT: Would it not be possible to have pressure upon the esophagus by retroperitoneal glands?

DR. CABOT: You mean bronchial glands. Yes, as far as I know. I have not seen that particular thing. The stenosis may be due to metastases as you suggest.

A STUDENT: What chances do you think there are of metastases superimposed on the old tuberculosis in the lung?

DR. CABOT: I never heard of the two together, and nothing in the plate suggests anything I have seen of metastases in the lung. Dr. Holmes, does that plate, aside from any knowledge you may have as to the outcome, suggest any metastases?

DR. HOLMES: No. Metastases of the lungs usually show if they come from below the diaphragm as sharply defined masses.

DR. CABOT: Usually bilateral.

DR. HOLMES: Yes. Primary malignant disease of the bronchus may cause occlusion of the bronchus and collapse of the lung. Malignant disease of long standing in the lung usually pushes the heart in the opposite direction.

A STUDENT: How about the gall-bladder, cholelithiasis?

DR. CABOT: The description of the tumor isn't like a description of the gall-bladder. The gall-bladder is generally a round or pear shape tumor; this seems to run transversely. In the majority of cases in which the gall-bladder is enlarged as a result of malignant disease you get jaundice too.

A STUDENT: Do you suspect intestinal tuberculosis?

DR CABOT: No, I don't see any reason to. I think he has enough cancer to account for his intestinal symptoms.

A STUDENT: Is intestinal tuberculosis common with phthisis?

DR. CABOT: Yes, it is common to get it and common not to get it. I cannot give the figures. The majority that die of tuberculosis of the lungs do not have much in the intestine.

A STUDENT: What is the commonest site of metastases to carcinoma of the rectum?

DR. RICHARDSON: The retroperitoneal glands and the liver.

A STUDENT: Aside from the metastases to the bone where does the prostate metastasize?

DR. CABOT: I have seen it in the lungs and liver. First bone, then what?

DR. RICHARDSON: Retroperitoneal glands, liver, and those cases where they are widespread through the body, the bones being involved.

DR. CABOT: I think we shall have to say cancer of the rectum and tuberculosis of the lungs. I am not sure about the middle, but guess metastases in the omentum.

### X-RAY INTERPRETATIONS

September 12. Findings are probably due to a longstanding pathological process in the chest which has displaced and distorted the esophagus. The chest findings suggest that the original process was tuberculosis.

October 17. Findings may be due to an extensive destructive and fibrosing process in the left lung or to collapse of the left lung from occlusion of the bronchus.

### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of the rectum.
Pulmonary tuberculosis.
Secondary anemia.

### DR. RICHARD C. CABOT'S DIAGNOSIS

Cancer of the rectum with metastases in the omentum.
Tuberculosis of the lungs.

### ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Diffuse carcinoma of the stomach with extension to the esophagus and with metastases in great omentum, peritoneum, small intestine, large intestine, rectum, retroperitoneal tissue and retroperitoneal lymph glands.
Cancerous stricture of the rectum.
Bronchiectasis and fibroid phthisis of the left lung.

2. *Secondary or terminal lesions*

Hypertrophy of the right lung.

3. *Historical landmarks*

Foci of obsolete tuberculosis of the upper lobe of the right lung.
Chronic pleuritis.

DR. RICHARDSON: In the abdominal wall there was a little distension at one place due to some distension of the intestine.

When we lifted the sternum off we were confronted by lung tissue everywhere. The middle lobe of the right lung, the upper lobe, and part of the lower lobe were in the foreground, and the upper and middle lobes extended over to the left lateral wall of the thorax. At one point high up on the left lateral wall the upper lobe presented a band of old adhesions. In the apical portion of the right upper lobe there was a mass of obsolete tuberculosis which was bound down by old adhesions in the region of the apex. Down along the right lateral margin of the right lung there were also old adhesions beneath which were small masses of obsolete tuberculosis. The

tissue of this lung elsewhere other than for the hypertrophy was negative. The heart was pushed over to the left with its right border in a line with the left border of the sternum. Turning back the hypertrophied right lung, which completely covered the heart, what there was left of the left lung appeared. It showed much distortion and dilatation of the bronchi—bronchiectasis—and in a few places the dilated bronchi led into small cavities in which there was a small amount of mucopurulent material. The lung consisted chiefly of connective tissue with here and there smaller and larger masses of pigmented fibrous tissue with intermingled fibrocalcareous masses. There was of course considerable chronic pleuritis, but not massive. The left lung could be practically covered over with one hand.

DR. CABOT: The bronchiectasis is a part of the tuberculosis?

DR. RICHARDSON: Yes.

A STUDENT: How long had he been living on one lung?

DR. CABOT: A good many years, I should think. It would take some time to hypertrophy a lung to that extent.

A STUDENT: Is that uncommon in tuberculosis?

DR. RICHARDSON: Compensatory hypertrophy in varying extents occurs at times, but I have never seen a lung so hypertrophied as this one. We had one case here in a child, where there was trouble in the bronchi, atelectasis of the lower lobe, hypertrophy of the upper lobe. It extended over into the left cavity quite markedly. Here however we have the right lung extending completely over into the left cavity and practically filling both cavities.

A STUDENT: Is there any active tuberculosis?

DR. RICHARDSON: No, I did not find any.

DR. CABOT: What was the position of the heart in relation to the thoracic wall?

DR. RICHARDSON: It was pushed over to the left as mentioned, with the right side pushed backward somewhat, bringing the left ventricle a little more to the front than it usually is, and with the intervening hypertrophied middle lobe of the right lung between it and the anterior thoracic wall. The heart was small, 222 grams, myocardium flabby, valves negative. The aorta and great branches showed only a very slight amount of sclerosis.

The esophagus was very much as Dr. Holmes has described it. At the lower end the wall was thickened a little where it joined the stomach, and this thickening was continued, but more markedly, into the stomach wall, which was the seat of a small-celled carcinoma of the leather bottle type. Along the greater curvature of the stomach there was a thick ridge-like mass which was thickened omental tissue infiltrated with cells of the new growth. Along towards the lesser omentum there were a few enlarged glands. Some of these showed infiltration with cells of the new growth and others seemed to be surrounded by cell-infiltrated tissue; but the glands themselves were negative. What gave them the feeling of a mass was this thickening of the peritoneum, this ridge, and the thickening of the stomach wall.

There was nothing in particular about the small intestine except that at the lower end of the ileum there was a strip that looked like the process in the stomach wall. The large intestine was negative down to the lower end of the sigmoid; but from that point down, involving the entire rectum, there was a process similar in all respects to the one in the stomach wall. The new growth markedly constricted the rectum.

A STUDENT: How about the prostate?

DR. RICHARDSON: That was negative, as were the seminal vesicles and testes.

DR. CABOT: Those two carcinomas were perfectly independent as I understand it?

DR. RICHARDSON: That is, of course, a point which could be debated. The process was regarded here as primary in the stomach.

DR. CABOT: In retrospect, Dr. Holmes, have you anything to say about the stomach?

DR. HOLMES: Part of the reason I missed it was that I knew the man had cancer of the rectum and that he had this process in the lungs, and it never occurred to me that he might also have cancer in his stomach. Of course the X-ray examination did show a fixed diaphragm, and we have other evidence of cancer such as regurgitation of the stomach contents into the esophagus. This infiltration of the whole stomach did not show in the X-ray. I cannot explain at all the presence of peristalsis over the lower end of the stomach. The infiltrated wall without any ulceration of course might allow a certain amount of peristalsis. This variety of neoplasm in the stomach is pretty rare. We used to call it cirrhosis of the stomach. We have a group of cases that have been diagnosed as syphilis which present a similar picture.

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## CASE 11012

### CHILDREN'S MEDICAL DEPARTMENT

An Irish-American schoolgirl of five entered October 11. Her complaint was diarrhea, vomiting and bloody stools of six days' duration.

F. H. Good, except that during the past ten days the mother, an aunt, and four other children had had symptoms similar to those of the patient but less severe.

P. H. Good, except for pertussis at two months.

P. I. October 6 at eleven o'clock at night the child began to have severe diarrhea with movements every half hour and vomiting of food or water. The next day the stools were bloody. The symptoms persisted. The par-

ents were unable to think of any food which could have caused the illness except some corned beef eaten October 2. The meat was very thoroughly cooked. The patient ate very little. The next day the youngest child became ill, October 4 another child, October 7 another, October 9 the aunt and October 10 the mother and another child. The children had bloody diarrhea.

P. E. A well nourished child with flushed cheeks, sunken eyes, red lips and dry skin and tongue, gasping frequently for breath and showing pronounced air hunger. Head and throat not remarkable. *Lungs* clear. *Heart* normal except for rapid action. *Abdomen* very warm. Generalized tenderness throughout. *Genitals* normal except for a small amount of pus in the vaginal outlet, apparently from the rectum. *Rectal examination.* Red congested areas with pus around the rectal walls and coming from the anal canal. *Pupils* normal. *Reflexes* active.

*T.* 104.6°-98.4°, *P.* 188-102, *R.* 44-18, all three generally falling. *Urine.* Amount and sp. gr. not recorded, a trace to the slightest possible trace of albumin at all three examinations, leucocytes at all, twice in large numbers; (no catheter specimen). *Blood.* Hgb. 80%, leucocytes 9,200, polynuclears 80%. *Wassermann* negative. *Stools.* Green, with microscopic blood at one of two examinations. *Culture from lower anal canal October 11.* Pneumococcus, colon bacillus. *October 13.* Colon bacillus. *Blood culture* October 14. No growth.

*Orders.* Individual precautions. Orange juice 3 iv at once. Liquids. Paregoric minims iv every four hours. Sodium bicarbonate gr. x every four hours. October 12. Paregoric minims iv. October 14. Paregoric minims vii immediately and one minim after each stool. Force fluids. Water with sugar. Boiled skimmed milk. October 15. Saline enema. Paregoric minims vii p.r.n. for abdominal pain. October 17. Paregoric minims vii for abdominal pain. October 29. Sodium phosphate acid gr. v and hexamethylenamin gr. v, each 4 i.d.

October 11 the child was given 500 c.c. of normal salt subpectorally at one o'clock, 500 c.c. of 5% glucose subpectorally at four o'clock, and 750 c.c. of normal salt solution subcutaneously in the inner surface of the thighs at ten. She was given 375 c.c. of glucose subcutaneously at four the next morning, 750 c.c. of normal salt subpectorally at noon, and 850 c.c. of normal salt subcutaneously at seven o'clock. October 13 she was given 735 c.c. of normal salt subpectorally at one o'clock and 750 c.c. subcutaneously at four. There was marked improvement in the symptoms. By the 14th the vomiting had ceased. There was still some diarrhea. October 15 she was given tuberculin 1/100 intradermally. She took fluids by mouth. Her appetite increased. By October 22 there was marked improvement. The diarrhea was checked, the temperature was nearly normal, and she was eating semisolid food without abdominal pain. The urine showed albumin, but few white cells until about the 29th. When they appeared she was placed on urotropin and acid sodium phosphate. October 30 the blood serum agglutinated bacillus Shiga 1:50 within twenty minutes. That day she was discharged.

## Discussion

### by dr. fritz b. talbot

### notes on the history

Four days after eating the corned beef is too long time for it to be responsible.

If the history only is considered, the one thing that must be ruled out is intussusception, which has a sudden onset. But the history of incidence in several members of the family practically rules it out. Furthermore, the course of the disease also ruled it out.

### notes on the physical examination

This is a characteristic picture of acidosis with air hunger, cherry-red lips, and a dried out body.

The trend of the temperature is 104.6° down to normal. The temperature, pulse and respiration were generally falling.

It was impossible to get the urine most of the time. There was no catheter specimen, consequently the pus found in the sediment may have come from the stools.

The relatively high polynuclear count suggests infection, but the white count was normal.

This is a characteristic case of acute dysentery, which is nowadays a very rare thing in this community. The diagnosis is made by a negative physical examination and a positive history of bloody stools containing pus. The question of greatest interest is, what is the infecting organism? Is this a pure dysentery or typhoid fever? And the second factor of importance is the presence of acidosis.

In typhoid fever blood and pus in the stools are rarely if ever found in children. I do not remember seeing the combination in any case. Bleeding in typhoid is a relatively rare complication in childhood. Attempts to make a positive diagnosis of dysentery at first were not successful. Later a positive diagnosis was made by obtaining a positive reaction with the blood to the Shiga dysentery bacillus.

The important side of the treatment of this case lies in the treatment not so much of the diarrhea as of the acidosis and the desiccation. The diarrhea of course resulted in drying out the body, and the drying out and diarrhea and vomiting together caused the acidosis, the dry-

ing out and the acidosis being symptoms and not diseases.

The orders were varied, but as we read down there is an order to force fluids, later to give boiled skimmed milk, saline enema, and then on October 29 an order for sodium phosphate and hexamethylenamin, because it was thought desirable to treat the pyelitis whether it was proved or not. A very large amount of liquid —nearly two liters—was put in subcutaneously, after which the symptoms of desiccation and acidosis commenced to disappear. This record shows what tremendous amounts of liquid are necessary before the body fluids are brought up to normal.

The rationale of the treatment was as follows: We have first diarrhea, loss of fluid from the body, secondly vomiting, failure of fluid to get into the body. Under ordinary circumstances a normal child will take into the body something like three pints in twenty-four hours. Consequently, on the three days before she stopped vomiting there was a deficit of three pints per day. That had to be made up, and we do not know how great the deficit was for the days preceding admission to the hospital. If anyone will try to go for twenty-four hours without any liquid whatever he will quickly have symptoms.

The second feature of the treatment comes back to the same thing, that is that she was starved. With such persistent vomiting as she had no food was getting into the body. The body, on the other hand, was being kept warm all the time, and in fact she was overheating the body because of fever. The energy for that heat was coming from the body. As first it was supplied by glucose. The sugar reserve has been shown to be sufficient to last eighteen to twenty-four hours in a small infant, and perhaps thirty-six or a few more in an older child. After it is used up the fat in the body is called upon to supply heat. If the fat does not have sugar to burn it up, then there is a formation in the body of acetic and diacetic oxybutyric acid. Those are the acids that precede uncompensated acidosis in a case of starvation. Consequently the most important treatment in a case of this sort is to supply sugar which will prevent the formation of the retones. This was done by administering glucose subcutaneously.

Clinically there is, I think, especially among the surgeons of this hospital, some question as to the advisability of administering glucose intravenously because of the possibility of shock. It was found out last year that this could be prevented by a certain technique in the preparation of the glucose and by adding a buffer solution which the chemist here has developed. Since this new technique has been adopted there has been no case of shock or any reaction of any sort from the use of glucose either subcutaneously or intravenously.

Paregoric is given in doses of one to five minims after each movement of the bowels. The dose then varies with the number of movements. It results in a self-determined dosage. When more paregoric is needed it is obtained because there are more movements. When the results are obtained the dosage automatically diminishes. The purpose of the paregoric is to reduce the number of stools. There are certain instances when paregoric should not be used, as for example during marked distension and evidence of toxic absorption. In such instances paregoric is contraindicated. On the other hand, if the stools are loose and watery and there is no distension it can be assumed that the toxic materials which may have been present need no longer be considered.

The treatment then in this case—and the results as we read on show that it was successful —was first to keep up the body fluid, second to supply sugar to prevent acidosis, third to prevent further loss of body fluids by stopping the loss from the bowels by means of paregoric, and finally by giving what food could be given to maintain the body resistance until the immunity was able to overcome the infection.

A PHYSICIAN: Have you any objection to the saline or glucose being given intraperitoneally?

DR. TALBOT: It is accepted as useful in many parts of the country. Personally I do not like to give it intraperitoneally in abdominal cases.

A PHYSICIAN: How do you arrive at your diagnosis or percentage of acidosis?

DR. TALBOT: The characteristic signs of acidosis are air hunger and cherry-red lips.

A PHYSICIAN: I meant do you have any chemical combination to arrive at the percentage of acidosis?

DR. CABOT: The carbon dioxide content of the blood we did not do in her case. We do it when we are working up a case for publication, but practically speaking we usually do not need to do it.

A PHYSICIAN: Do you think bicarbonate of soda does much good in acidosis?

DR. TALBOT: In fasting acidosis it is not necessary. In an infant it does do good in the deep acidosis that we get from such diarrheas as cholera infantum and Asiatic cholera. It is essential in these two diseases, and it is probably essential to put it in intravenously. But in fasting acidosis I have come to the conclusion that we can straighten out ninety-nine per cent. of the cases without using soda at all. In infancy the threshold or the line between acidosis and alkalosis is so close that the danger of alkalosis should always be borne in mind when soda is given. The possibility of pushing an acidotic condition over to alkalosis must always be borne in mind. It is better not to give a baby more than two drams of soda in twenty-four hours under any condition.

A PHYSICIAN: Do you use hexamethylenamin as a rule?

DR. TALBOT: You can use either soda or hexamethylenamin. The choice lies with the individual. My own choice is to use hexamethylenamin in the early cases and soda in the late ones. But I do not believe I could give any scientific proof that one method is better than the other. Sometimes one works and sometimes the other.

A PHYSICIAN: Did you say two drams or grains?

DR. TALBOT: Two teaspoonfuls. Occasionally we can give an infant more, but I think it is a pretty safe rule to keep under two teaspoonfuls in twenty-four hours. As long as the kidney function is normal we shall not get into trouble.

A PHYSICIAN: If you give more what trouble will you get into?

DR. TALBOT: Alkalosis.

A PHYSICIAN: Can you prove by blood analysis the changed condition of the blood towards the alkalosis?

DR. TALBOT: Yes, and the symptoms of alkalosis that are best known are those that receive the name of tetany.

A PHYSICIAN: In case of the development of alkalosis what would be the proper procedure?

DR. TALBOT: It depends on a great many factors, but if the alkali is omitted the condition usually corrects itself. With severe symptoms of tetany from the use of bicarbonate of soda the subcutaneous injection of 15 minims of saturate solution of magnesium sulphate usually acts very rapidly and beneficially. It is not wise to give an infant much more than fifteen minims because of the possibility of magnesium sulphate poisoning. It is a sixty-six per cent. solution. Ten grains (15 minims of a 66% solution) in the case of a baby or young child, so far as my clinical experience goes, is safe.

### DIAGNOSIS

Dysentery, bacillary (Shiga).

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## CASE 11013

### SURGICAL DEPARTMENT

An American laborer of sixty-three entered July 17.

F. H. Not obtained.

P. H. Not obtained, except that for the past few months he had been losing weight, his appetite had been poor and his stools a little harder in consistency than usual. He urinated once at night.

P. I. July 14 he was seized with pain in the right upper quadrant not severe enough to make him stop his work until the following day. He said the pain was really a soreness and was colicky in nature. July 16 he had severe pain in the lower abdomen, radiating to the testicles. He thought once or twice he was going to vomit, but did not do so. His last normal bowel movement was July 15. He was said to have had good results from enemata July 16. He thought he passed a little gas. Micturition was somewhat burning. For a day and a half he had taken only fluids.

P. E. Evidence of considerable loss in weight. "Looks malignant." Tongue dry, with a thick white coat. Teeth false. *Heart* and *lungs* negative. *Abdomen* generally spastic throughout, most markedly so just above the symphysis. Maximum tenderness in both lower quadrants, possibly more on the right. Both rings relaxed. The patient said he had bilateral herniae, but that they had not been down during the past few days. Marked tenderness on pressure in the right ring. No masses felt. Only an occasional wave of peristalsis heard. Pain seemed colicky as the patient was being examined. He said it seemed to start around the umbilicus and go down to both lower quadrants. *Rectal examination, pupils* and *reflexes* not remarkable.

Before operation *T.* 102.2°, rectal. *P.* and *R.* not recorded; *urine* negative for albumin and sugar; *blood* not recorded except leucocytes 16,000.

Operation was done the evening of admission. The patient made a good ether recovery. He had some difficulty in voiding next day. There was considerable drainage, but no distension. The fluid intake was good. July 21 the general condition was poorer. The temperature was 98°-99.8°, the pulse 81-97. The chart looked much better than the patient. The condition grew steadily worse. July 23 the abdomen was distended. There was a right inguinal hernia which could not be reduced. The urinary output gradually decreased, although the fluid intake increased. July 25 he was cold and clammy. July 26 he began to have stercoraceous vomiting, although the bowels moved several times. That evening he died.

### DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

This is one of the cases where I am glad I am not in the position of the general practitioner who sees the patient first. In most medical cases it really does not make much difference whether we make a diagnosis today or tomorrow. Where it is a surgical emergency it may make the difference between life and death, and whereas we see a good many mistakes here and sometimes blame the first practitioner who sees

the case, I think on the whole the batting average is pretty good. It is often very difficult to make a diagnosis early. Here for instance is a man who comes in three days after trouble has started, and it is still a confusing picture as to diagnosis.

One thing we are pretty sure of, that it is a condition which needs operation. He has had three days' symptoms pointing toward the abdomen. He has a temperature of 102.2°, and a blood count of 16,000. He has spasm all over his abdomen, but without distension. He did have a good result from enema the day before admission.

I think there are two or three things that will help us to narrow the diagnosis, because this is confusing enough so that we have to think a bit as to whether we are going to make an incision below or above the umbilicus. What are the possibilities?

First the appendix, to be thought of always in any abdominal emergency. He is sixty-three. That entitles him to the most atypical symptoms. It starts in the right upper quadrant, which does not rule out the appendix. He has a temperature and blood count consistent with it, and an abdomen which shows spasm throughout. It might be an appendix.

Can it be intestinal obstruction? Not with a temperature of 102.2°, with a good bowel movement the day before, two days after he began to have trouble. It seems to me we can rule that out. Of course where there has been hernia and none is present at the time of examination we have to consider always whether or not there is strangulation from reduction *en bloc*. It hardly seems to me we are justified in making that diagnosis.

Can it be malignant disease in fact, which has been gradually shutting down, which has perhaps now instead of causing obstruction caused perforation? That does occur. We cannot entirely rule it out. The pain in the first place was not the pain of abrupt perforation. That is as a rule an intense, agonizing pain which does not allow the patient to work. It could be however what we call a subacute perforation, the gradual working through of necrosis and a reaction of the peritoneum so that it was partly walled off, and now he has a general peritonitis from that.

Can it be any other perforation? We have no evidence in the past history of indigestion to suggest any trouble in the stomach or duodenum. Moreover at sixty-three we do not expect ulcer without the previous symptoms; so that is a rather poor bet as we read this story. Of course if that was a subacute perforation and a three-day spread of infection it would give the picture as it was seen when he came in.

Gall-bladder? We should not expect with a progressive cholecystitis that at the end of the third day the centre of symptoms would seem to be below the umbilicus, but that it would be over the gall-bladder area.

I do not think as I read this that it is possible for me to make a certain diagnosis. But I should say he had an acute abdomen and the only thing was to go in, heading for an appendix on the theory of chances.

### DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Acute abdominal emergency, possibly appendicitis, possibly malignant disease of the cecum with subacute perforation.

### PRE-OPERATIVE DIAGNOSIS

Intestinal obstruction.
Malignant disease of the cecum?

### OPERATION

Gas and ether. Right rectus muscle splitting incision. On opening the peritoneum a cloudy fluid escaped. An appendix cake the size of an orange was broken into and a ruptured appendix, gangrenous down to the cecum, was removed. It was tied off very carefully. The cecum was very edematous. Wick deep into the pelvis and into the abscess cavity.

### PATHOLOGICAL REPORT

A swollen appendix. Its surface is covered with fibrin, its walls thickened. The lumen contains a large soft concretion. No evidence of perforation.

Acute appendicitis.

### FURTHER DISCUSSION

I think I should have put the intestinal obstruction last, the appendicitis first, and malignant disease of the cecum second. It is a very important thing to remember that appendicitis at the two extremes of age can be and often is very atypical.

This picture is best explained on the basis of what we know of spreading peritonitis with the vomiting, distension and obstruction that goes with that. I do not think we need consider malignant disease in the intestine with obstruction, or that the herniae which it speaks of here were obstructed. A hernia that cannot be reduced is not necessarily an obstructed hernia. So that I assume the best bet was spreading peritonitis with a post-operative obstruction due to local adhesion from the operation.

### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute appendicitis with spreading peritonitis.
Cancer of the large intestine?
Appendectomy with drainage.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Acute appendicitis.
General peritonitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Acute appendicitis.)

2. *Secondary or terminal lesions*

General peritonitis.
Intestinal obstruction with distension of the small intestine.
Right inguinal hernia with pyocele.
Acute pleuritis, right.
Edema of the lungs.
Chronic ulcer of stomach.
Slight arteriosclerosis.
Arteriosclerotic nephritis.

3. *Historical landmarks*

Appendectomy.
Obsolete tuberculosis of the mesenteric lymph glands.

DR. RICHARDSON: The head was not examined.

The abdomen was not distended and the wall was soft, yet there was general purulent peritonitis. The peritoneal cavity contained much purulent fluid, and the peritoneum generally was coated with fibrinopurulent exudate. There was an intact suture at the base of the appendix.

We found no masses of new growth anywhere. At the lower end of the ileum a few coils were collapsed, with adhesions about them. Above that the small intestine was distended containing much fluid material, and there was much similar material in the stomach. The large intestine was negative. There was a small ovoid boggy mass 4 cm. by 2½ cm. which rounded up under the skin in the region of the right inguinal canal. Just below it, a little high, the right testicle was felt. The mass was a pyocele, a collection of pus.

Several of the mesenteric glands were enlarged and stony hard,—obsolete tuberculosis.

The right pleural cavity contained a small amount of cloudy fluid and fibrinous exudate. There was 200 c.c. of clear fluid on the left.

The aorta showed a slight amount of arteriosclerosis above the diaphragm. In the abdominal portion and the great branches there was a slight to moderate amount of arteriosclerosis. —all told not much arteriosclerosis, best marked in the abdominal portions and great branches.

The kidneys combined weighed 220 grams; the capsules were slightly adherent, the surfaces rather granular, finely to coarsely, the tissues tough, with some indistinctness of the markings, the cortex narrow,—arteriosclerotic nephritis.

In the stomach there was a small chronic ulcer.

## CURRENT LITERATURE

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### STUDIES IN ASEPTIC INTESTINAL ANASTOMOSIS

BURKET, W. C. (*Archives of Surgery*, Part 1, November, 1924).

In his second article, Burket describes an aseptic method of end-to-end anastamosis by the invagination of the ligated blind ends of the intestines to form a digestible boli, the release of which reestablishes the continuity of the intestinal lumen. He states that:

1. The method is a simple, clear-cut operative procedure that makes end-to-end intestinal anastamosis, especially of the large bowel, a much safer undertaking than the open method, certainly from the standpoint of soiling and infection.
2. The method is applicable to both small and large intestines in an animal of any size or age.
3. No special mechanical device or instrument is required.
4. No material is withdrawn nor is any operative procedure carried on through the line of suture in order to reëstablish the lumen.
5. No instrument or nondigestible mass, such as the button used in intestinal anastamosis, is left *in situ* to interfere with healing or anything that must be passed out of the intestines either by peristalsis or otherwise.
6. The anastamosing sutures are all tied before the intestinal lumen is reëstablished.
7. Asepsis is dependent on the effectiveness of the actual cautery and the skill with which sutures are placed in the submucosa without penetrating the mucosa.
8. A method is available which will permit the study, free from the factor of infection from soiling, of various problems relating to intestinal anastamosis, such as the problem of postoperative adhesions, the selection of the most suitable number and kind of sutures, etc.

[E. H. R.]

### A CLINICAL STUDY OF DISEASES OF THE CIRCULATION OF THE EXTREMITIES

BROOKS, B., and JOSTES, F. A. (*Archives of Surgery*, Part 1, November, 1924), describe a new method of examination. Their article is thorough and interesting, illustrated by many experimental cases, charts and plates. Their method of procedure is to ascertain the temperature of the extremities by the insertion of a needle into the tissues which is connected with a galvanometer. The description of the technic and its value is included in the article.

[E. H. R.]

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## THE NEW YEAR

FATHER TIME, with his not unkindly scythe, has reaped another row and brought us to the turn again. Once more he has stolen a march on us and finished a year before we were quite ready for it to end, for we are the hares and he is the tortoise. We tarry while he plods along and sleep when he has the goal in sight. Nevertheless he brings us his compensation; for each unfulfilled year that he takes away he leaves a fresh one, its pages unmarred, its deeds still to be performed by those who have the courage and the strength to perform them. It is ours to do with what we will. It is the great opportunity again awaiting us. Some will husband it and use it well and write it into their characters; others will waste it as they have wasted those that went before and those that are yet to come, for Time, if just, is generous.

The year that has just been written up and turned over, to be filed with the records of the ages, has witnessed great achievements in our broad field of medicine. A glance at the record sheet will show that many have been faithful to their trust and have made some mark upon each day. Such records will live in the advancement of the race, though the names of their makers may be lost in that great oblivion from which but few escape.

The open season for resolutions is on us, and many are made and most are broken. A good resolution adhered to is a rare and pleasant thing indeed, but a broken resolution may not be entirely lost. It may be counted as something to have made the attempt, and man is but a frail thing after all. The JOURNAL, with its famous conservatism, might well put its resolution in the past tense, resolving that the finished year has been the most successful of its career. Lest this should offend the bolder spirits among us, we might almost dare to make the same resolution for the year on which we are now entering, a year, be it noted, that will bring with its close the close of the first quarter of this twentieth century for which so much was promised. Much was promised and much has already been fulfilled but it has also brought its disappointments. The millennium has not arrived. The lion and the lamb have not yet learned to lie down together. There is much left to be done in the seventy-six short years at our disposal and we must up and at them!

The JOURNAL wishes for the New Year enlightenment to its foes, if it has them, and to its friends prosperity, happiness and success; success not only in the material things of life—those, for our good, should be carefully measured out—but successs in the betterment of ourselves, in the improvement of our opportunities and in the acquisition of those spiritual and intellectual blessings that will make our lives a joy to live.

## INCREASING HEALTH HAZARDS

DR. YANDELL HENDERSON, of Yale University, reported to "Science Service" that the mysterious "insanity gas" causing the recent outbreak of poisoning at Bayway is in reality tetracthyl lead. It is reasonable to assume, therefore, that the symptoms described were actually due to an acute lead encephalopathy.

Tetracthyl lead when added to gasoline prevents premature explosions and increases efficiency. It eliminates the "knock" and makes possible engines using much higher compression than is at present possible. Dr. Henderson reports that he has been trying for many months past to warn the health authorities and the general public of this new hazard, for although the amount added to gasoline is small, yet if all cars used it, a person on Fifth avenue, New York, might in eight hours inhale the minimum amount sometimes inducing symptoms of lead poisoning. This possibility is enhanced by the fact that, when a cylinder misfires, undecomposed tetracthyl lead may be discharged.

The U. S. Bureau of Mines at Pittsburgh has studied the effect on animals of the combustion products of gasoline with this substance added in the usual commercial concentration of one part in a thousand. The concentration of ex-

haust gas in air used was that which, when coming from the average automobile would be four parts of carbon monoxide in ten thousand parts of air, a concentration allowable for a period of only an hour from the standpoint of carbon monoxide, and exceeding that existing in ordinary street traffic. The animals, observed for a test period of eight months, showed no signs of lead poisoning. Observations on man showed that lead from exhaust gases when inhaled is again exhaled.

The danger from this anti-knock mixture seems to be negligible. With the rapid increase in chemical and mechanical discoveries and their wide appreciation in industry and in medicine as well, however, the need must be emphasized for examining them as to their possible detrimental effects on health. The possibility of delayed as well as immediate reaction must be reckoned upon. We know of agencies that do not exert their untoward influences upon us except after the lapse of years. There are even indications that these reactions may be delayed for generations. Many individuals still living are suffering from the delayed effects of overexposure to the roentgen-ray; a danger that was not appreciated during the early years of its use. The same applies to radium, and now evidence is even being put forward that seems to indicate that the worst effect of over-radiation may not appear until the second or third generation. Our ingenuity is constantly introducing new hazards, many of them subtle in nature. Protection of the individual against these dangers must keep pace with their elaboration. In evolving new experiments or new therapeutic measures in medicine, in particular, these possibilities must be borne in mind. Too often our knowledge is but a flash from our ignorance. Although antitoxin has saved in cases beyond record, allergy has occasionally saved. Salvarsan has restored many thousands to comparative health, but it has also its victims. The intravenous use of glucose with its occasional severe reactions has been practiced for years, but it was not until this month (B. M. & S. J., Dec. 11, 1924) that Stoddard published his method for preventing them.

## CANCER IN EARLY LIFE

UNDER this heading the Metropolitan Life Insurance Company reports on a study of 90,175 deaths from cancer among Metropolitan Industrial policy holders in a period of twelve years, with the discovery that 1,910 of these were of persons under 25 years of age. Sarcoma was responsible for most of the deaths in this age group.

The organs most frequently involved were the brain, the bones, the kidneys and suprarenals, and the lungs and pleura. Of all the brain cases one-third occurred under 25 years; of bone and kidney and suprarenal tumors 25 per cent. were in this group, and of the lungs and pleura, 12 per cent. Diagnosis of brain tumor based on clinical symptoms was found to be unreliable and the percentage of error high. It is believed that such errors, however, are compensated for, those on the negative and positive side of the line probably being about equal in number. Bone tumors have been recognized to be associated often with growth and developmental anomalies, accounting for their frequent occurrence in children.

In the same bulletin a comparison between the death rates from cancer and tuberculosis is reported; the death rate from tuberculosis is as yet a little higher than that from cancer, 97 per 100,000 in 1922 as against 87 from cancer, yet it is made clear that a child having reached the age of 10 years is in more danger of dying from cancer than from tuberculosis. On the whole the deaths from tuberculosis occur in early adult life and those from cancer at middle life and after.

With a rising cancer death rate and a falling tuberculous death rate, it may be expected that the actual rate may soon change places. An important factor is unquestionably the great public attention with the expenditure of large sums directed towards tuberculosis control, while at present provisions for cancer research, diagnosis and treatment are comparatively small. An increasing toll from cancer with a decreasing toll from tuberculosis should soon serve to direct public attention more forcibly to the former.

# The Massachusetts Medical Society

## SECTION OF OBSTETRICS AND GYNECOLOGY

CHARLES E. MONGAN, M. D., *Chairman*
FREDERICK C. IRVING, M. D., *Secretary*
THOS. R. GOETHALS, M. D., *Clerk*

Boston Lying-In Hospital, Boston, Mass.

(Communications and questions addressed to the Clerk will be gladly received and cheerfully answered.)

A RECENT letter to the Section with reference to the necessity for careful estimation of the size of the baby in relation to that of the maternal pelvis reads in part as follows:

"My experience has taught me that one simple way to find out whether the child can be born the natural way regardless of the size of either is, a short time before the time of delivery to manually force the head down into the pelvis through the straits. If by introducing the hand in the vagina you can feel the part advance that has always told me the child could be born nat-

urally, and possibly a comfortable confinement."

In the last paragraph of his letter the correspondent asks, "How can one tell the size of the child, and whether it means forceps or prolonged labor?"

The answer to the above question is dependent upon the ability of the physician to compare the size of the maternal pelvis, which can be measured with a fair degree of accuracy, with that of the baby, for which no accurate method of measurement has yet been described. The size of the baby is computed from several factors, including the development of the uterus at the time appraisal is made; the proportion between the amount of amniotic fluid and the amount of baby contained therein; the size of the baby's head and breech as grasped through the abdominal wall; the stature of the patient and her husband; and, most important, the experience and ability of the physician in computation. In other words, skill in predicting the weight of the fetus in utero is like skill in interpreting auscultatory sounds in the chest, and is only acquired by patient and prolonged practice.

There is, however, considerable accuracy in determining the relationship of fetus to pelvis. Let us consider briefly two common types of cases. In each we may postulate that the patient is of normal physique and development, shows no abnormalities of heart, lungs or kidneys, and is not suffering from any constitutional disease such as diabetes, lues, or any form of anemia. Both patients are seen some three weeks before the estimated date of term. One is a primigravida, the other has a living healthy child which was born two years ago normally and which weighed seven pounds, eight ounces at birth; the former we shall call Mrs. P., the latter Mrs. M.

Examination of Mrs. M. shows that her external pelvic measurements are normal, the intercristal 28 cm., the interspinous 25, the external conjugate 20. Palpation shows the baby to be presenting with the occiput left and anterior, the head freely movable from side to side above the brim of the pelvis. The fetal heart is counted at 140 beats per minute in the left lower quadrant. An estimate of the baby's weight is between siz and six and a half pounds. Vaginal examination with two fingers reveals the absence of obstruction in the pelvis either from the pelvis or the tissues within, the cervix soft and patulous to one finger tip, and the baby's head filling out the lower uterine segment smoothly and evenly. The promontory of the sacrum cannot be reached, and the diagonal conjugate therefore cannot be measured without the aid of anesthesia. As the examining hand is withdrawn the index finger is placed within the vagina on the lower border of the symphysis while the thumb of the same hand is held on the upper border; by this means the height of the symphysis is estimated to be approximately normal. The hand, then withdrawn, is clenched, and the fist pressed gently with its knuckles upward between the tuberosities of the patient's ischia, where it is found there is ample space for the fist to pass.

What can we say regarding prognosis of labor? Summarizing the above, we are dealing with a multipara, para-2, whose past obstetric history is normal and who has one living child. Her general condition is good, her pelvis is of normal size and normal throughout, and her baby is estimated at present to be slightly smaller than her first; even though her pregnancy continue for another month this child is not apt to surpass the first in size to any appreciable degree. The fact that at the time of examination the baby's head is not engaged in the pelvis is, under the circumstances, of little moment, because in multiparous women the vertex is as apt as not to remain unengaged until labor starts. We are, therefore, justified in giving a prognosis of uncomplicated labor and delivery, barring accident.

With Mrs. P. the findings on general physical examination are the same as those in the case of Mrs. M. Her pelvis has the same measurements and vaginal examination reveals no internal abnormalities. The baby is estimated to be also about six pounds. Inasmuch as the patient is a primigravida we cannot definitely predict the character and efficiency of her future labor pains. However at this time, approximately three weeks before the estimated date of confinement, we are more likely than not to find on palpation that the baby's head is either fixed in the brim of the pelvis or has passed well down through the superior strait; in which case we can rest assured that with a normally effective labor delivery from below will be possible and spontaneous delivery the most likely outcome. Engagement of the head usually occurs in primiparae several weeks before the onset of labor, and, when it has occurred, indicates that the particular baby can, with the rare exception of a markedly contracted pelvic outlet, be expected to be deliverable from below. In Mrs. P., however, we have found by examination that the physician's fist can easily be passed between the tuberosities of the ischia, which means ordinarily that the average sized baby's head will pass the inferior strait.

Should engagement of the head not have occurred at the time the examination is made the method of impression mentioned above may be of great value. The physician presses the head of the child downward in the axis of the superior strait with one hand on the abdominal wall, while the fingers of his other hand in the vagina reveal that the head enters the pelvis, often to the level of the lower border of the symphysis. A positive finding of this sort is a reliable answer to the question as to whether the baby can pass through the pelvis.

The foregoing is not intended to discuss or even to suggest the question of pelvic delivery

versus Cesarian section in any case. It is designed merely to illustrate the typical findings in the normal pregnant woman shortly before term, with the suggestion that the physician who habitually examines his patients during the last month of pregnancy will be able to predict with a high degree of accuracy the probability of favorable outcome in the cases thus examined, and that deviations from normal relationship between the baby and the pelvis through which it is destined to pass will be discovered at a time when future difficulties can be foretold and guarded against.

## MISCELLANY

### STAFF CHANGES AT THE MASSACHUSETTS GENERAL HOSPITAL

By vote of the Trustees, the surgical services at the Mass. General Hospital have been reduced from three in number to two; of these two, Dr. Daniel Fiske Jones will be chief of the East Surgical Service, and Dr. Edward P. Richardson of the West. The latter service will be devoted largely to teaching and research.

Dr. C. A. Porter will occupy the position of Surgeon-in-Chief of both surgical services, but without active executive duties.

### UNITED STATES PUBLIC HEALTH SERVICE

#### Annual Report of the Surgeon General of the Public Health Service

A document of very considerable public interest, the annual report of the Surgeon General of the Public Health Service for the fiscal year ended June 30, 1924, has been transmitted by the Secretary of the Treasury to Congress.

Surgeon General Cumming points out that there is an almost universal tendency towards a diminution of effort on the part of Government health agencies, national, State and local, due to the necessity for economy in official business.

Considerable data are given with regard to a number of our common contagious diseases: diphtheria, for example, showed a reduction during the calendar year 1923 as compared with the previous year. A very decided increase is noted in measles. In 1923, 45 States reported a total of 725,529 cases of this disease with 10,282 deaths as compared with 260,803 cases and 3,592 deaths in 1922. Little change is seen with regard to scarlet fever.

There was an increase of about 60 per cent in the number of cases of whooping cough with an increase from 4.4 deaths for every hundred cases to 5.5 deaths per hundred cases for the two years. This apparent increase in cases may be due to neglect in reporting milder cases. During the five years, 1917 to 1921 inclusive, more than 53 per cent of the deaths from whooping cough were in children under one year of age and more than 93 per cent in children under five years of age. These facts emphasize the great importance of keeping young children away from this disease, if possible, as the chances of surviving an attack increase with the age of the child.

Forty-five States reported a total of 30,771 cases of smallpox, showing that this disease is much more prevalent in the United States than in European countries. There are a few countries where there is a greater prevalence, among which are China and India. There is a marked contrast in the amount of smallpox seen in the New England States as compared with the south, west and the middle west. In Massachusetts, for example, during the five years ended December 31, 1923, but 114 cases of smallpox were reported. In Michigan, during the same period, there were 15,384 cases, while in California during that time, there was a total of 16,223 cases. These States have very nearly the same population.

Tuberculosis and typhoid fever continued to show some decline in both cases and death rates.

The general death rate was slightly higher in 1923 than in 1922 in 25 of the 36 States for which data are available. The highest general death rate 20.3 per thousand is shown for cities in Mississippi and the lowest, 6.5 per thousand, for the rural districts of Idaho. The death rate from all causes for 30 States for which reports are available was 12.3 per thousand population in 1923 as against 11.9 in 1922.

It is pointed out that the average length of human life in the sixteenth century was estimated to be between 18 and 20 years. At the close of the eighteenth century, it was still less than 25 years,—and as late as 1900, it was between 45 and 48 years. Comparing with these figures, the present average length of life estimated at 56 years in the United States, it is recalled that approximately 15 years has been added to our span of life in this country since 1870.

All plague suppressive measures carried on by the Federal Government in States other than California had been suspended at the close of the fiscal year ended June 30, 1922. It has been necessary to continue operations on a small scale in certain counties in California on account of plague in ground squirrels, and Surgeon General Cumming states that he has no doubt that under present conditions this squirrel infection will continue for years to come. He warns that, "this reservoir of plague in the United States should ever be kept in mind nor should our vigilance in maintaining squirrel free zones around rat infested cities in these

infected communities be relaxed. One case of human plague, presumably infected in Monterey County, California, by ground squirrels, was reported during the fiscal year and that eight plague ground squirrels had been found in San Luis Obispo County. These infected rodents by no means represent the extent of infection remaining."

It should be stated that the annual report from which these facts are taken was written some weeks before the outbreak of pneumonic plague in Los Angeles.

There was no importation of exotic disease during the year with the exception of a few cases of typhus fever that may have entered surreptitiously by way of the southern border of the United States.

The Marine Hospitals of the Public Health Service (including contract hospitals) furnished during the year 1,232,754 patient-days hospital treatment, and all relief stations furnished in addition, 403,864 out-patient treatments. The majority of these patients are merchant seamen, although there is a considerably increasing demand for hospital and other medical services from certain other beneficiaries, especially those of the U. S. Employees' Compensation Commission and the U. S. Coast Guard Service. Six and one-half per cent of the patients remaining in hospitals June 30, 1924, were beneficiaries of the U. S. Veterans' Bureau.

Additional buildings for the National Leper Home at Carville, La., have increased the capacity of that institution to 420 beds.

Through the State Department, from diplomatic and consular offices, and through other sources, reports of 109,359 cases of cholera with 71,858 deaths were received by the Surgeon General. These cases were distributed over nine countries. Bubonic plague shows a much wider distribution than cholera, there having been reported 233,708 human cases with 189,096 deaths distributed among the peoples of forty countries.

Smallpox remains the most widely distributed plague in the world, due, the Surgeon General says, to neglect of vaccination, revaccination and in part to organized opposition to this most efficacious measure. Approximately one-fifth of all cases reported occurred in the United States.

Typhus fever, though not as extensive and dangerous as plague, is still being reported from many countries. The measures enforced by the Public Health Service to prevent the introduction and spread of this disease are directed exclusively against the body parasite which conveys it and have proven efficacious.

Yellow fever was reported from only three countries during the year and while still a very potential danger to the people of the Southern State, caused very little interference with commercial relations during 1923-24.

For a number of years, the Public Health Service has conducted an extensive coöperative campaign for the discovery and cure of cases of trachoma,—a serious, contagious disease of the eyes, which, untreated, invariably results in extensive impairment of vision and often a total loss of the sight. This work has been conducted with much success, and a program has been prepared by the Public Health Service and approved by the Commissioner of Indian Affairs, for the purpose of undertaking it among the Indians.

Demonstration projects in rural sanitation were conducted in 72 counties in 16 States. This is one of the most important and productive works in which the Public Health Service is engaged.

Further studies in cancer, goiter, malaria, tularaemia, Rocky Mountain spotted fever and other diseases have been made.

A vaccine for Rocky Mountain spotted fever has been prepared which will protect animals, which die without its use, but as yet no opportunity has been afforded to test its efficacy in man.

The importance of milk as a food and the dangers which may be caused by contaminated milk have long been recognized. The public Health Service has continued to be actively interested in the problems of maintaining a pure milk supply.

In studies made in Child Hygiene, it was found that each child in a large group studied is ill during the ordinary school session on an average of 2.3 times, involving a total average loss of 7.3 days per child per school year or 4.1 per cent of the possible days of attendance. The common cold and headache were found to be the most common causes of absence from school, with digestive disorders next and other diseases in the following order of frequency, namely,—grippe, influenza, tonsillitis, sore throat and measles. Measles, however, cause considerably more absence in terms of days than either headache or digestive disorders. The duration of illnesses as measured in school days lost per case was found to be greatest in whooping cough, scarlet fever, pneumonia, diphtheria and measles in the order named.

Two physicians and several laboratory workers have been attacked by either Malta fever or tularaemia through experimental work and have suffered long and seriously from their effects.

A new method has been devised for the standardization of Insulin which has revealed the fact that there is a very considerable variation in the potency of commercial supplies of this important substance.

## A WORTHY CASE

THE amount received in response to our appeal in the JOURNAL of December 4 now totals $295.

## REMOVALS

DR. WALTER H. PARKER has moved from Dorchester (Norfolk), to Brewster (Barnstable).

DR. HENRY D. LLOYD has moved his office from 486 to 479 Commonwealth Ave., Boston.

DR. GEORGE H. POIRIER has moved from Marlboro Street to 60 Bay State road, Boston.

DR. ABNER POST has moved to 130 Brattle Street, Cambridge.

DR. ELIZABETH MACNAUGHTON has moved to 132 Mason Terrace, Brookline.

DR. JULIUS W. COHEN has moved from 1067 to 1663A Blue Hill Ave., Dorchester.

DR. LOUIS FIRCHBEIN has moved from Dorchester to Brighton. His office is at 366 Commonwealth Ave., Boston.

DR. JOHN V. C. FISHER of Dorchester now has an office in Boston at 510 Commonwealth Ave.

DR. P. JOSEPH MURRAY has moved from Harvard Street to 447 Talbot Ave., Dorchester.

DR. EDWARD MARTIN has moved from 246 to 255 Warren St., Roxbury.

DR. HENRY M. EMMONS has moved from Jamaica Plain to West Roxbury. His office is at 320 Commonwealth Ave., Boston.

DR. B. W. RUDMAN has moved his residence from Roxbury to Brookline. His office is at 68 Bay State Road, Boston.

DR. CYRUS C. STURGIS has moved his residence from Roxbury to Brookline. His office is at 721 Huntington Ave., Roxbury.

## RECENT DEATHS

**LEAVITT.** — DR. WILLIAM W. LEAVITT, a retired member of the Massachusetts Medical Society, died at the House of Mercy Hospital, Pittsfield, December 24, 1924, aged 87.

He belonged to a distinguished Massachusetts family. Born in West Stockbridge, he was graduated from Williams College as of the class of 1859 and studied at the Albany Medical School and later at the College of Physicians and Surgeons, New York, where he took his M.D. in 1860.

When the Civil War broke out he enlisted as assistant surgeon in the navy and served with Admiral Farragut in numerous engagements. Resigning from the navy in 1864 he returned to West Stockbridge, practised there for 20 years and moved to Pittsfield in 1885.

Dr. Leavitt was one of the oldest members of the State medical society, having joined it from West Stockbridge in 1865. From 1888 until his name was placed on the retired list in 1906 he was librarian of the Berkshire District Medical Society. For a term in the nineties he served his district as supervising censor and councilor.

Dr. Leavitt belonged to the Grand Army and the Masons. He was married three times. The survivors are his widow and a grandson.

**RISLEY.**—On December 17, 1924, DR. JOHN NORMAN RISLEY died at his home in New Bedford, of pneumonia, at the age of 48.

Dr. Risley was a graduate of the Medical Department of the University of Pennsylvania in 1891. He settled in Philadelphia, moving to New Bedford about ten years ago and specializing in the eye, ear, nose and throat. He was a member of the American Medical Association, the American Ophthalmological Society and the Massachusetts Medical Society. He is survived by his widow, who was Miss Marion Wentworth of New Bedford, and one child.

**WHITTIER.** — DR. FRANK N. WHITTIER, physical director at Bowdoin College, a noted pathologist and criminologist, died of acute heart trouble December 23, 1924, on a train between Brunswick and Portland, Me. During the war he served as a major in the Medical Reserve Corps. He was 63 years old.

Born in Farmington, Me., December 12, 1861, he was educated at Wilton Academy and Bowdoin College, from which he was a graduate in 1885. He studied law for a year and then studied physical training under Dudley A. Sargent until 1888. He was a graduate from Bowdoin Medical School in 1889. He was instructor in pathology and bacteriology in the Bowdoin Medical School, 1897-1901, professor since 1901, and medical examiner of Cumberland County since 1909. He was the first man in the country to use the serum test for blood in a court case; also the first to demonstrate the fact that the firing-pin of every rifle has a distinct individuality which can be shown by photomicrographs, and that this individuality is stamped on the primer of a shell at the time of firing.

He was a member of the American Medical Association, American Association of Pathologists and Bacteriologists, the Maine Medical Association, the Society of Gymnasium Directors, and the Society for the Advancement of Physical Education, a member of Delta Kappa Epsilon, Phi Chi and Phi Beta Kappa fraternities.

**VAN REYPEN.**—REAR ADMIRAL WILLIAM K. VAN REYPEN, retired, former surgeon-general of the navy, died December 22, 1924, in Washington. He was born in New Jersey in 1840. He was retired in 1902.

Admiral Van Reypen entered the navy as an assistant surgeon in 1861. After a short period of duty at the hospital at the Brooklyn Navy Yard, during which time he received his medical degree from New York University Medical School (1862), he was sent to take charge of the naval hospital at Key West. He found 53 patients ill of yellow fever, which had killed his predecessor. With only one nurse to help him he took charge of the hospital until the end of the Civil War.

In the following 20 years he served with every naval squadron and in nearly every naval station, and made a remarkable record for improving the

health of the men he supervised. In 1895 he was called to Washington to the post of medical director of the navy. He had been virtual head of the navy's medical department for some time and had represented the United States at several important international health conferences, including the International Medical Congress at Moscow.

He was appointed surgeon-general of the navy in 1897, on the eve of the Spanish-American War. His administration of his department won him a high reputation at home and among foreign naval officials, for he was almost the only department head in either the army or navy who went through the conflict uncensured. Due to his foresight, the Solace, the first naval hospital ship, had been ready before the outbreak of the war. Its value was clearly shown in the naval engagements of the war and the idea was closely copied by other nations.

Admiral Van Reypen was a member of the Metropolitan, Washington, Chevy Chase and University clubs of Washington, and also of the Sons of the American Revolution and the Loyal Legion.

## THE SKIN MAN

O some may sing the surgeon's skill, he wields a wicked blade;
While not a few prefer G. U., 'tis not a tidy trade;
Pure Science has her acolytes, a brave, devoted band,
But I'd rather be a skin man and with the skin men stand.

Outside the throat room's dreadful door the knitting women wait,
While all unseen the guillotine keeps up its ghastly gait;
Like plums upon the dewy grass the tender tonsils fall,
But either they or adenoids intrigue me not at all.

The skin man never is aroused as breaks the morning pale
By vehement parturient or ailing infant's wail,
Nor is he snatched from Morpheus' arms, from some delicious dream,
To aid an old prostatic case who cannot start his stream.

Behind his broad expanse of desk, mayhap of tropic teak,
He views the rash and takes the cash and does it week on week.
His mind is calm, his spirit blithe, his future is assured,
For though his patients oft return they're never quickly cured.

With ointments bland he tries his hand to soothe, but ere too late,
If soothing makes them worse again, then he can stimulate;
If stimulation aggravates, his course runs ever smooth,
For he can cease to stimulate and start once more to soothe.

No paladin of Arthur's age, no gleaming, crested knight
Of old Romance had such a chance his lady to delight;
For him that blush of damask rose, for him that downcast eye
Who drives the ringworm from her cheek, the itch-mite from her thigh.

So farewell, dermatitis, from you forever free;
Good-bye the bugs that bite us, the louse, the tick, the flea;
Edema, erethyma, pruritis ani too—
Like driven snow from head to toe we bid you all adieu.

ANON.

# CORRESPONDENCE

## HEALTH EXAMINATIONS

Worcester, Mass.

*Editor, Boston Medical and Surgical Journal:*

As one who is very much interested in public health work I wish to compliment Dr. Lee and his Committee on Health Examinations for the excellent report printed in the November 6 issue of the JOURNAL.

For several years I have been urging my patients to have a yearly examination and from that rather limited experience I would like to make a few suggestions.

I would like to adopt their blank as published, with a few additions, namely:

1. Enlarge the history blank by asking for more detail in regard to dietetic habits. It is almost axiomatic that faulty dietetic habits are the cause of a great deal of chronic disease.

2. Enlarge the history blank still farther by asking for more detail in regard to individual habits of exercise.

3. In the examination blank add a space for temperature record, recent gain or loss in weight, girth of chest and abdomen, and result of rectal or prostate examination.

I would like to suggest also that the committee prepare a small folder, with cuts if possible, for the office table and for mailing to patients with the monthly bills, which would give in a simple but convincing way the benefits of the annual examination.

Possibly this might find its way into the monthly bulletins of the Chamber of Commerce and other semi-social or fraternal organizations, and in that way get a widespread publicity of this modern method of life extension.

Further I would suggest our medical schools in their extension courses give a few lectures and clinical demonstrations to the general practitioner how best to make this examination and thus stimulate him to look for minor deviations from the normal and make him more keen in his discovery of the very beginnings of what may be disease.

I hope that this report will be accepted and the committee instructed to continue its study of the subject.

Yours truly,
ROY J. WARD.

## DR. DE GERIN AND HIS PNEUMONIA SERUM

The New York Academy of Medicine
December 13, 1924.

*Editor, Boston Medical and Surgical Journal:*

I have been asked to make reply to your inquiry of December 9 regarding Dr. De Gerin.

I have just had an interview with Dr. De Gerin and have learned from him that he has as yet made no plans to present to the profession in New York his experiences in the use of the serum for the treatment of pneumonia. He told me that he had developed such a serum and seemed very enthusiastic as to its possibilities. I gather that he hopes to have the opportunity of reading a paper on the subject before some medical society.

He is stopping at the Hotel Plaza and expects to remain in New York for some little time.

Very truly yours,
FREDERICK P. REYNOLDS,
*Medical Secretary.*

NOTE — Our readers may remember a sensational statement in the Boston papers setting forth that Dr. De Gerin had returned from abroad with a serum which he had perfected for the cure of pneumonia and would demonstrate the use of this serum under the auspices of the New York State physicians.

## LONDON LETTER

*(From Our Own Correspondent)*

### JUBILEE CELEBRATIONS OF LONDON SCHOOL OF MEDICINE FOR WOMEN

Fifty years ago the London School of Medicine for Women was founded by Dr. Sophia Jex Blake, one of the three pioneer women doctors of England—the others being Elizabeth Blackwell, the first to graduate in medicine from Geneva University, New York State, and the other being that very distinguished physician, Dr. Elizabeth Garrett Anderson.

On the evening of October 24 the first of these jubilee celebrations took place, in the form of a banquet at the historic Guildhall in the city of London and where women had never before acted as hosts, or rather hostesses, at such a function. Over this gathering of more than 600 Dr. Mary Scharlieb, the dean of the medical women of England and president of the School of Medicine for Women in London, presided. Dean Inge, of St. Paul's Cathedral, known in all parts of Great Britain as the gloomy dean because he is not afraid to tell the truth in an outspoken manner, proposed the toast "Women's Work" and eulogized what they had done and what they were doing, with certain reservations. Lady Barrett, one of the best known women members of the medical profession in this country, pointed out that most people were coming to see that public work done by one sex was rather like work done by a person blind in one eye. Two eyes were required, looking at things from a slightly different angle. In time to come the whole world would, she thought, realize that what these difficult times required was the vision that came from complete humanity, and not the vision that came from the work of either one sex or the other. Mrs. Fawcett, sister of the late Dr. E. Garrett Anderson, and widow of the late blind Postmaster-General, Mr. Henry Fawcett, and herself one of the most able literary women of the time, said that at the International Conference of Medical Women held in London last July, a distinguished medical man said to her that the difference between men and women doctors was that the former dealt with the symptoms and consequences of disease, whereas women looked for the cause and for its prevention. That was the most tremendous compliment he could have paid to women. Professor G. A. Gardner, vice-chancellor of the University of London, proposing the toast of the London School of Medicine for Women, said the school began with 14 students and now had over 400. Out of the 2000 women on the medical register in Great Britain, 1100 owed their training to the school. Miss Aldrich Blake, dean of the school, replied. Professor Winifred Cullis submitted the toast of the chairman, and Dr. Mary Scharlich in reply said that they were not anxious as to the future of the school, and the medical profession could be satisfied that women would play the game and maintain its good traditions.

On the afternoon of October 25 a great thanksgiving service, attended by Princess Beatrice and Princess Arthur of Connaught, was held in St. Paul's Cathedral to celebrate the jubilee of the London (Royal Free Hospital) School of Medicine for Women. As the service opened a long profession of professional women entered the nave, headed by three students of the school, Miss E. Clarke, Miss V. Smallpiece and Miss G. Wilkins, the three nieces of Dr. Sophia Jex Blake, the founder of the school; Miss Katherine Jex Blake, late head of Girton College, Cambridge University, and Miss Henrietta Jex Blake, principal of Lady Margaret Hall, Oxford; Mrs. Fawcett, LL.B., sister, and Dr. Louisa Garrett Anderson, daughter of the late Dr. Elizabeth Garrett Anderson; Professor Sir Charles Sherrington, president of the Royal Society; Lord Dawson of Penn; Sir William Hale-White; Lord Riddell, president of the Royal Free Hospital; Mr. James Berry, consulting surgeon to the Royal Free Hospital; Dr. A. Louise McIlroy, professor of obstetrics, and Lady Barrett, consulting physician for diseases of women; Dr. Mary Scharlieb, president, Miss Aldrich Blake, dean, and Miss Louie Brooks, warden, of the school; Sir St. Clair Thomson, Miss Frances Ivens, Dame Janet Campbell of the Ministry of Health; Sir Humphrey Rolleston, president of the Royal College of Physicians. The lesson was read by Dean Inge, and during the service a tribute in the following words was paid to women's work and service by the Archdeacon of London: "Through the ages there have been women in spirit born before their time. They had vision and faith, and by their toil and sacrifice, by their persistence and courage, opportunities for women in training have been won. Three pioneers opened the doors of medicine to women: Elizabeth Blackwell, Elizabeth Garrett Anderson, and Sophia Jex Blake. With love and reverence our hearts turn to them." The sermon was preached by the Bishop of Lichfield.

With regard to the School of Medicine for Women in London, it may be stated that at the end of fifty years' service, during which time the school has had no endowments for chairs, it is still free from debt. But in view of the necessity for providing for its women medical students medical education of the highest standard, it is felt that the dangers to efficiency which are always present when teaching is financed solely out of a yearly income liable to sudden and unexpected fluctuation should be removed. Accordingly an effort is being made to raise an endowment fund of £50,000 to endow three chairs, in anatomy, physiology, and pathology. These will be named after Elizabeth Blackwell, Elizabeth Garrett Anderson and Sophia Jex Blake. The fund now stands at £26,000.

### SIR ARBUTHNOT LANE, BART., M. S., LONDON, EDITOR OF THE PRACTITIONER

Sir Arbuthnot Lane, the well-known London surgeon, has accepted the editorship of *The Practitioner*.

A remarkable book has been published recently by Regan, Paul Trench, Trubner & Co., E. P. Dutton & Co., New York. The book is written by Dr. F. G. Crookshank of London and it has the somewhat quaint and quite arresting title of the Mongol in Our Midst, a study of man and his three faces. Dr. Crookshank brings forward if not absolutely convincing at any rate a mass of fresh evidence in favor of a threefold origin of the human race. There are in the world three human stocks corresponding to the great types of the great ape. The book is concerned with those numerous people of non-Mongolian race who have many of the physical characteristics of the Mongol race and who live in civilized countries and of course in America. However, a long review of this book is out of place in this letter, and it must suffice to say that Dr. Crookshank's hypothesis is worked out lucidly and ably, and the book provides fascinating reading for that large number of persons interested in the descent of man. The book is only of slightly over one hundred pages, but it puts the case in a nutshell.

## REPORTS AND NOTICES OF MEETINGS

## WORCESTER DISTRICT MEDICAL SOCIETY, WORCESTER, MASSACHUSETTS

December 9, 1924.

THE January meeting of this Society will be held on the 14th (not 7th as previously announced in the JOURNAL). It will take place at

the Worcester City Hospital. Dr. Royal P. Watkins will read a paper on "The Doubtful Abdomen," and Dr. Lewis Gregory Cole's motion pictures of stomach and duodenum will be shown.

Very truly yours,
PHILIP H. COOK, M. D.,
*Secretary.*

## ESSEX NORTH DISTRICT MEDICAL SOCIETY

THE 83d semi-annual meeting of this society will be held in Centre Church vestries, Main Street, corner of Vestry Street, opposite City Hall, Haverhill, Mass. (Tel. 548), Wednesday Jan. 7, 1925.

Dinner will be served at 12:30 sharp.

Following the dinner the business meeting will occur, after which these papers will be presented:

1. James Warren Sever, M.D., of Boston, Instructor in Orthopedic Surgery at Harvard Medical School, upon "Back Lesions Due to Industry and Disease," with lantern slides (40 minutes).

2. Francis D. Donoghue, M.D., of Boston, Medical Adviser to the Industrial Accident Board, upon "Medical Aspects of the Workmen's Compensation Act" (20 minutes).

3. Mr. Wm. W. Kennard of Somerville, Chairman of the Industrial Accident Board, upon "Administration of the Workmen's Compensation Act" (20 minutes).

4. John W. Cronin, Esq., of Boston, Vice-president and general counsel for the Liberty Mutual Insurance Co., of Boston, upon "Relations Between Insurance Companies and Physicians" (20 minutes).

Discussions are invited upon the above matters at the end of the program (3 minutes to a discussant).

The Annual Assessment may be paid at this meeting ($8.00).

Some copies of the History of the Massachusetts Medical Society, by its Secretary, W. L. Burrage, M.D., of Brookline, are still unsold. Additional orders may be placed with the Secretary of Essex North. The price is $6.00.

J. FORREST BURNHAM, M.D.,
*Secretary.*

CHAS. S. BENSON, M.D., *President,*
Dec. 30, 1924.

## MEETING OF SUFFOLK DISTRICT MEDICAL SOCIETY

A MEETING of the Suffolk District Medical Society was held at the Boston Medical Library, December 17, 1924. Dr. Roger I. Lee presided.

Dr. Paul White, the speaker of the evening, took up the drug treatment of heart disease. Digitalis, strophanthin, quinidine, the nitrites, and adrenalin are the only drugs with specific action upon the heart of therapeutic value. The other drugs of the digitalis series are either inert or of lesser potency than digitalis, and more toxic in therapeutic doses. Camphor has recently been shown to be useless in congestive heart failure. Strychnia is ineffective probably even as a mild cardiac tonic; adrenalin is a drug which, given directly into the heart muscle or ventricles, may act as a cardiac stimulant in an emergency.

The indications for the use of digitalis are (1) congestive failure, (2) auricular fibrillation, with or without failure, and (3) doubtful cardiac insufficiency where the drug is used as a therapeutic test. Congestive failure must be carefully differentiated from effort syndrome in which digitalis is contraindicated. The administration of digitalis is still frequently faulty. Enough must be given to obtain complete saturation, either over a short or a comparatively long period. The amount of the drug necessary for digitalization is 1½ grains of the leaf (or 15 minims of the tincture) for every 10 pounds weight. That is approximately 22 grains for a 150-pound individual. The patient excretes daily about 1½ grains of the drug which must be added to the total given, if digitalization is to be accomplished over a number of days. If the patient is to be saturated rapidly he should be under close observation. The dried leaf is the most dependable and convenient form in which to give the drug, in pills, each containing 1½ grains. The tincture is less reliable, both because it is less constant in potency and because it is usually given inaccurately by drops; the drop usually represents only 1/3 to ½ of a minim. When the tincture is prescribed it should be given in doses measured in minims and ten times the dose of the dried leaf. Digitalis in aqueous solution may be given by rectum.

There are two indications for quinidine: (1) to prevent recurrent paroxysms of paroxysmal fibrillation. Three grains as a test dose, followed by 6 grains a day, sometimes for months or years, may prevent these recurrent attacks. (2) In permanent fibrillation of recent onset (six months or less) in the absence of cardiac failure or marked cardiac damage. In these cases the same test dose is given, followed for the next week by 30 grains a day (5 doses of 6 grains each) unless normal rhythm recurs sooner. It is important to see the patient each time before the next dose is given to exclude toxic symptoms: vomiting, exhaustion or extreme tachycardia. There is always some increase of the pulse rate under quinidine before the resumption of normal rhythm. After normal rhythm has been obtained quinidine should be given in doses of 6 grains a day for some weeks.

(3) In paroxysmal tachycardia. Dr. White has had some measure of success in preventing recurrences in a third to a half of his forty cases so treated. Quinidine is also worth trying in auricular flutter. In the cases of paroxysmal fibrillation the patients experience marked relief from palpitation, but cardiac failure itself is not greatly influenced by the resumption of normal rhythm.

The discussion was opened by Dr. Henry Jackson who spoke a word against the very rapid method of digitalization. He described an unusual case of digitalis poisoning in which the pulse rate was 30 and the patient complained of yellow vision. Dr. Jackson has seen no benefit in bacterial endocarditis from cacodylate of soda or from vaccines.

Dr. Hamilton said that some cases of recurrent fibrillation have resisted all methods of treatment, including quinidine, until relieved of thyroidism. Dr. Levine again emphasized the difference between the minim and the drop. He sounded a note of warning with regard to indiscriminate quinidine therapy, mentioning three cases at the Peter Bent Brigham Hospital which died during quinidine administration. He reported three patients with Stokes-Adams' disease with ventricular standstill and epileptiform attacks, who were markedly benefited by barium chloride in 30 milligram doses, the barium causing increased irritability of the ventricular muscle.

Dr. Pratt and Dr. White closed the discussion.

## BERKSHIRE DISTRICT

A MEETING of this society was held at Park Club, Pittsfield, Tuesday, December 30th.

Speaker, George Burgess Magrath, M.D., Medical Examiner of Suffolk County twenty-five years. Subject, "Experiences of a Medical Examiner in Murder Cases."

The Berkshire Bar Association was invited to meet with the physicians.

## WACHUSETT MEDICAL IMPROVEMENT SOCIETY

THE Wachusett Medical Improvement Society held its monthly meeting at Holden District Hospital on the evening of December 3rd.

After a substantial banquet served by the Nursing Staff of the Hospital, the meeting was called to order by the President, Dr. F. H. Washburn. The usual routine business was transacted and interesting cases reported by several members of the Society.

The Society was favored with a paper by Dr. J. W. O'Meara entitled: "Sacro-Iliac Strain." Dr. O'Meara brought out the point that all low back pains are not sacro-iliac. His talk was illustrated by several X-ray pictures.

Dr. R. S. Perkins also favored the Society with a paper entitled: "Treatment of Fractures of the Femur," which was illustrated by lantern slides of fractures with splints applied. X-ray pictures, before and after reduction, were shown.

The papers were freely discussed.

The next meeting of the Society will be held January 7th, at Worcester, Sally Louise Tea Room, 368½ Main Street, at 8 P. M. Dr. Frank H. Lahey of Boston will give a paper on "Management of Thyroid Disease."

### SOCIETY MEETINGS

*Essex North District Medical Society*

January 7, 1925. Semi-annual meeting at Haverhill.
May 6, 1925. Annual meeting at Lawrence.

*Franklin District Medical Society*

The meetings of the Franklin District Medical Society will be held on the second Tuesday of January, March and May.

*Hampden District Medical Society*

Meetings to be held on the third Tuesday of January and the third Tuesday in April.

*Hampshire District Medical Society*

The meetings will be held the second Wednesday of November, January, March and May.

*Middlesex East District Medical Society*

Wednesday, January 21. Harvard Club. Dr. Franklin K. White, "Diagnosis of Gall-Bladder Disease."
Wednesday, March 18. Harvard Club. Dr. John H. Cunningham, "Urinary Retention: Its Significance and Treatment."
Wednesday, April 15. Harvard Club.
Wednesday, May 13. Colonial Inn, North Reading.

*Middlesex North District Medical Society*

January 28, 1925.
April 29, 1925.

*Middlesex South District Medical Society*

Winter Schedule—The plans for winter meetings of the Society include the stated meetings in October and April, two hospital meetings, and five meetings to be held in conjunction with the Suffolk District Medical Society and the Boston Medical Library (two surgical, two medical, and one general).

*Norfolk District Medical Society*

January 27, 1925. Masonic Temple. Subject: "Some Trends of Medical Teaching and Medical Practice." Speakers: Drs A. S. Begg and W. P. Bowers.
February 24, 1925. Masonic Temple. Subject: "The Need of Periodical Physical Examinations and How to Make Them." Speaker. Dr. Francis H. McCrudden. A second speaker will be selected to present another subject at this meeting.
March 31, 1925. Tufts College Medical School. This meeting given over to Drs. Leary and Watters for the purpose of giving us a medical examiners' talk.

*Norfolk South District Medical Society*

Meetings will be held the first Thursday of each month from October to May, inclusive, at 12 noon, at the Norfolk County Hospital, South Braintree.

*Suffolk District Medical Society*

January 28. General meeting, in association with the Boston Medical Library and the Middlesex South District Medical Society. "Some Experiences of a Medico-legal Pathologist" (lantern slides), Dr. George B. Magrath
February 25. Surgical Section, in association with the Middlesex South District Medical Society. "Pyelonephritis," Dr. Arthur H. Crosbie.
March 25. Medical Section, in association with the Middlesex South District Medical Society. "The Treatment of Pneumonia," Dr. Edwin A. Locke.
April 29. Annual meeting. "Hypertension and Longevity," Dr. Harold M. Frost.

*Worcester District Medical Society*

January 7, 1925. Surgical meeting. Place, subject and speaker to be announced.
February 11, 1925. Memorial Hospital, Worcester. Papers will be read by the members of the hospital staff.
March 11, 1925. St. Vincent's Hospital, Worcester. Papers will be read by the members of the hospital staff.
April 9, 1925. Subject and speaker to be announced.
May 14, 1925. Annual meeting.